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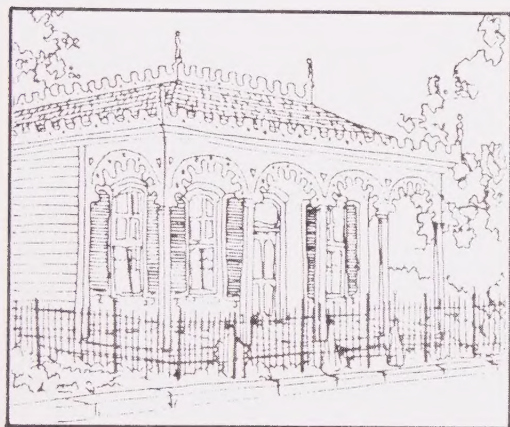
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GENERAL PLAN UPDATE

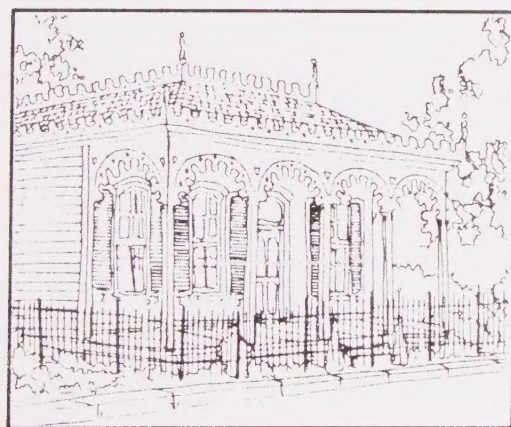


MEA and Issues & Options


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**CITY OF CALISTOGA
MASTER ENVIRONMENTAL ASSESSMENT
AND ISSUES AND OPTIONS**

PREPARED FOR:

**RICHARD SPITLER
ACTING PLANNING DIRECTOR
CITY OF CALISTOGA
1232 WASHINGTON STREET
CALISTOGA, CALIFORNIA 94515**

PREPARED BY:

**STA PLANNING, INC.
250 MONTGOMERY STREET, SUITE 1000
SAN FRANCISCO, CALIFORNIA 94104**

**DRAFT: DECEMBER 1989
FINAL: OCTOBER 1990**

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INTRODUCTION

INTRODUCTION

DOCUMENT FORMAT

This Master Environmental Assessment is an inventory of environmental conditions in the City and the Study Area. It generally describes existing conditions of resources in the region then focuses on existing conditions in the City and the Study Area both narratively and graphically.

The MEA is organized such that a resource is initially defined and described. Maps of environmental resources and constraints are located in the text of the MEA. Appendix A contains Issues and Options which the City will consider in formulating a land use plan. Appendix B provides an index to each topic as it relates to State General Plan requirements. City or State standards, policies, and programs related to environmental resources or constraints will be located in the individual elements of Volume II of the General Plan. The additional analysis that is required to fulfill CEQA will be provided in Volume III of the General Plan Update.

PURPOSE

In January of 1978, the Resources Agency of the State of California issued amendments to the "Guidelines of the Implementation of the Environmental Quality Act of 1970". One of the substantive changes in the CEQA Guidelines was to allow local governmental bodies to prepare a Master Environmental Assessment (MEA). A MEA is intended to function as a comprehensive environmental informational base. The base may be used as a reference document and early warning system in combination with the individual environmental documents required by CEQA for most public and private developments.

ENVIRONMENTAL REVIEW PROCESS

After the preparation of the MEA and the General Plan Policy document, an Environmental Impact Report (EIR) will be prepared to fulfill the requirements of the CEQA. In 1970, the Legislature of the State of California passed CEQA into law. CEQA requires that the environmental consensus of a project be disclosed. An EIR must be prepared for projects which have the potential for significant adverse environmental effects.

In developing the policy basis for the law, the State determined that:

- The maintenance of a quality environment for the people of this state now and in the future is a matter of statewide concern.
- The capacity of the environment is limited, and the government of the state must take immediate steps to identify all critical thresholds for the health and

safety of the people. Coordinated actions necessary to prevent such thresholds from being reached must also be taken.

- The long-term protection of the environment shall be the guiding criteria in public decisions.
- Every citizen has a responsibility to contribute to the preservation and enhancement of the environment.

The state gave all public agencies the responsibility of adopting objectives, criteria, and procedures for the evaluation of the projects and the preparation of EIR's. A major focal point of this process is the EIR. The EIR is an informational document designed to inform public decisionmakers and the general public of the environmental consequences of proposed projects.

USES OF THIS DOCUMENT

The Master Environmental Assessment and subsequent EIR are intended to streamline the time and cost associated with the environmental review process and to provide a land-use planning tool by identifying cumulative, long-range, and area-wide environmental conditions. The intended uses of this document are as follows:

- to provide resource inventory and analysis for the policy plan of the General Plan Update that partially satisfies the requirements of the General Plan Guidelines;
- to generally identify environmental resources and hazards associated with a parcel of land within the City or its study area such that future projects can strive to accommodate or eliminate environmental constraints at the time of initial project design;
- to provide a source of basic information which permits City staff and the general public to focus the contents of initial studies and environmental impact reports;
- to allow the incorporation of current data and information from the MEA into new environmental reports in order to reduce the volume of new reports;
- and, to provide a data base for utilization in land-use planning.

REVISIONS AND SUPPLEMENTS

The MEA in its present form provides an information base which can be updated with minimal effort. For this reason, it should be periodically updated through efforts of City staff or the environmental review process itself.

RESIDENTS OPINION SURVEY

In anticipation of a General Plan Update, a telephone survey was conducted by the City and Regional Planning Department at the California Polytechnical State University, San Luis Obispo in the fall of 1987. A total of 285 surveys were attempted and 137 were completed; a 48% response success rate. Complete documentation of the survey is located in the General Plan document prepared by California Polytechnical State University, San Luis Obispo. This report is available for review at the Planning Department.

79% of those surveyed own their homes, while 21% are renters. The housing types that residents would like to see more of are single family homes. The housing types that residents would like to see less of include mobile homes, duplexes, and condominiums.

90% of the respondents considered the preservation of existing natural resources as a high priority. It was found that respondents felt the most significant environmental problem to be the protection of the water quality (32%). 78% of the respondents favored agricultural land protection, while 94% favored agricultural protection of County land area.

The majority of the respondents described the roads in their area as fair (42%). A significant group (36%) described the conditions of the roads in their area as good and, only a small percentage of the same group described the roads as poor. When asked about the adequacy of the public transit system (Tri-County Express), the largest response (41%) felt it was inadequate.

Around two-thirds of the Calistoga residents (67%) purchased their basic goods (such as groceries and gasoline) in Santa Rosa. Large expenditure items (such as appliances) were most frequently purchased in St. Helena (58%). For entertainment (including movies, restaurants, and similar outlets) the most frequented town was Santa Rosa (36%). In addition, Calistoga residents most frequently went to Santa Rosa for professional services (43%). For specialty retail goods, including jewelry and other luxury items, the largest number of residents shopped in St. Helena (50%).

A majority of residents surveyed felt the historical buildings and structures of the downtown should be preserved (42%). Most of the residents surveyed wished to see Calistoga grow (52%). A majority of these wished to see the growth occur within the present City boundaries (51%).



REGIONAL AND LOCAL SETTING

REGIONAL AND LOCAL SETTING

INTRODUCTION

Napa County's 513,000 acres of land and water consist mostly of mountain ridges and narrow valleys stretching across the county in a northerly-southerly axis. Napa County is located between the Vaca Mountains on the east and the Mayacama Mountains on the west. The southern border also consists of the marshy delta bordering San Pablo Bay. The western and eastern portions are made up of highland areas which consist of parallel mountain ridges with intervening valleys. Mt. St. Helena has the highest elevation in the county at 4,344 feet above sea level. There are four cities in Napa County: Calistoga (4,386 pop.), St. Helena (5,098 pop.), Yountville (3,065 pop.), and Napa (57,863 pop.). The populations figures represent 1989 totals.

The City of Calistoga is located in the extreme northern end of the Napa Valley near where the Mayacama and the Vaca mountains converge. The City is at the junctions of State Highways 29 and 128. It is located twenty-seven miles north of Napa, twenty miles northeast of Santa Rosa, and seventy-four miles northeast of San Francisco. Exhibit 1 provides an illustration of the City's location relative to other cities, highways, and the Napa County boundaries.

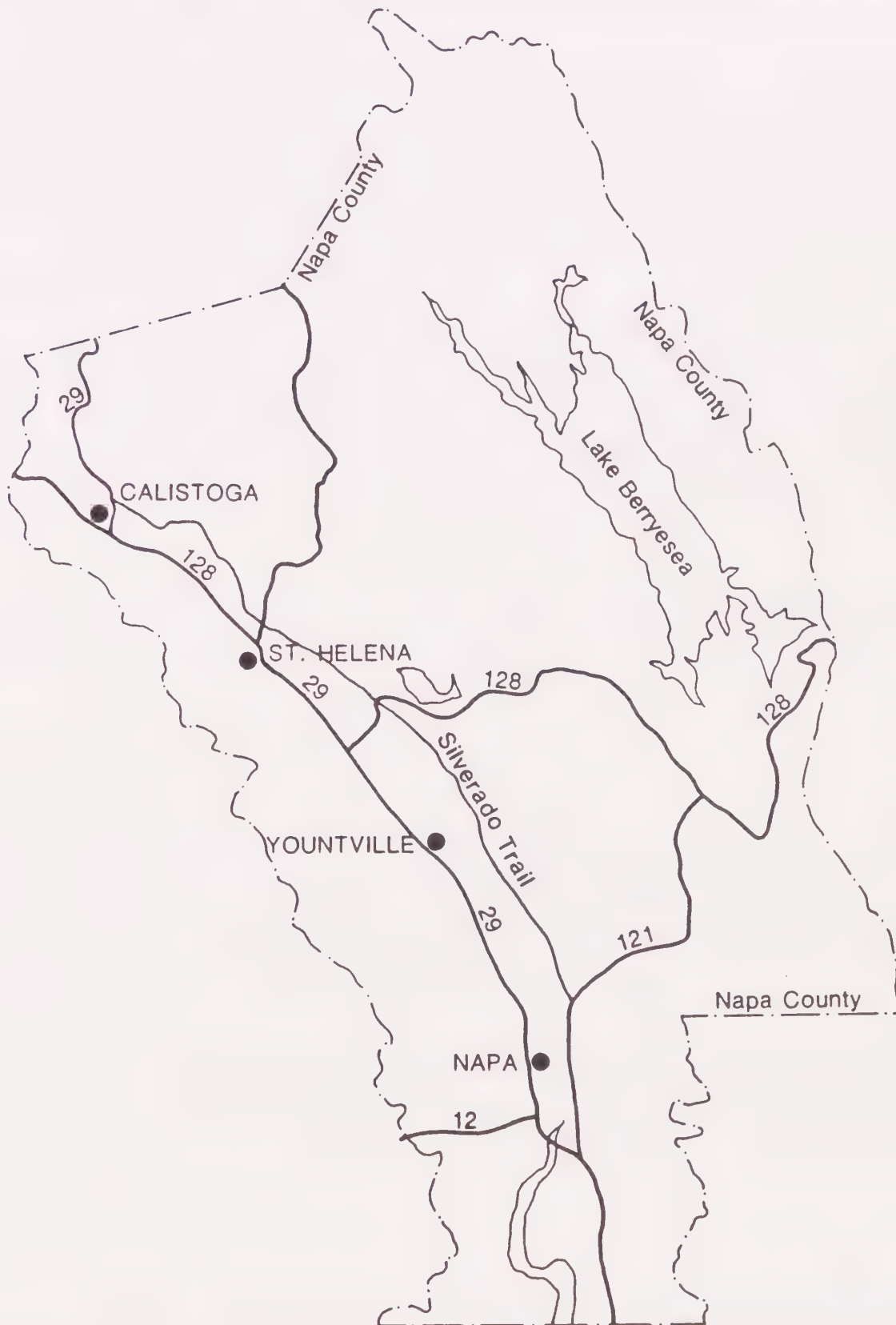
SPHERE OF INFLUENCE

A Sphere of Influence is a defined area established by the City and the Local Agency Formation Commission (LAFCO) which represents the "probable ultimate boundary" of the City. The adoption of Sphere of Influence is required by State Government Code 56076, 56301, 56378, and 56425. The Sphere of Influence of the City of Calistoga is coterminous with the City boundary.

STUDY AREA

For planning purposes a logical study area has been formulated for the MEA and General Plan Update. These areas are larger than the City's Sphere of Influence and do not necessarily correspond to any city or other boundary. Although the City does not have direct jurisdiction over the study area, the study area is intended to reflect a community's identity and to designate an area for which a community could give consideration and develop planning policies.

The City of Calistoga General Plan boundary is within the Calistoga Study Area. The Study Area generally encompasses the City of Calistoga, its Sphere of Influence, and small portions of land to the east, west, and northwest.



Source: Napa County General Plan

REGIONAL LOCATION

MASTER
ENVIRONMENTAL ASSESSMENT
City of Calistoga

STA inc.

no scale



Exhibit 1

In total, the Calistoga Study Area occupies approximately 2,200 acres, or 3.43 square miles. The Study Area generally lies to the: west of Dunaweal Lane; to the south of Rosedale Road, Silverado Trail, and Lake County Highway; to the east of Tubbs Lane's frontage lots; and to the north of Foothill Boulevard frontage lots. Exhibit 2 indicates the boundaries of the MEA Study Area. Exhibit 3 depicts the USGS map for the Study Area.

LOCAL PLANNING EFFORTS

The Calistoga General Plan was adopted on March 15, 1977. The most current element of the General Plan is the Housing Element, September 1983, which requires updates every five years. Amendments to the Housing Element were adopted in April 1985. Although this General Plan has been able to meet the community's needs for several years, it is now in need of update. A General Plan is currently under preparation. This MEA is the first step of the General Plan process outlined by the City of Calistoga Planning Department.

Two recent moratorium ordinances have been adopted which limit growth in the City. Ordinance No. 449 places a moratorium on land use applications. Ordinance No. 442 places a moratorium on water and sewer hook-ups.

NAPA COUNTY PLANNING EFFORTS

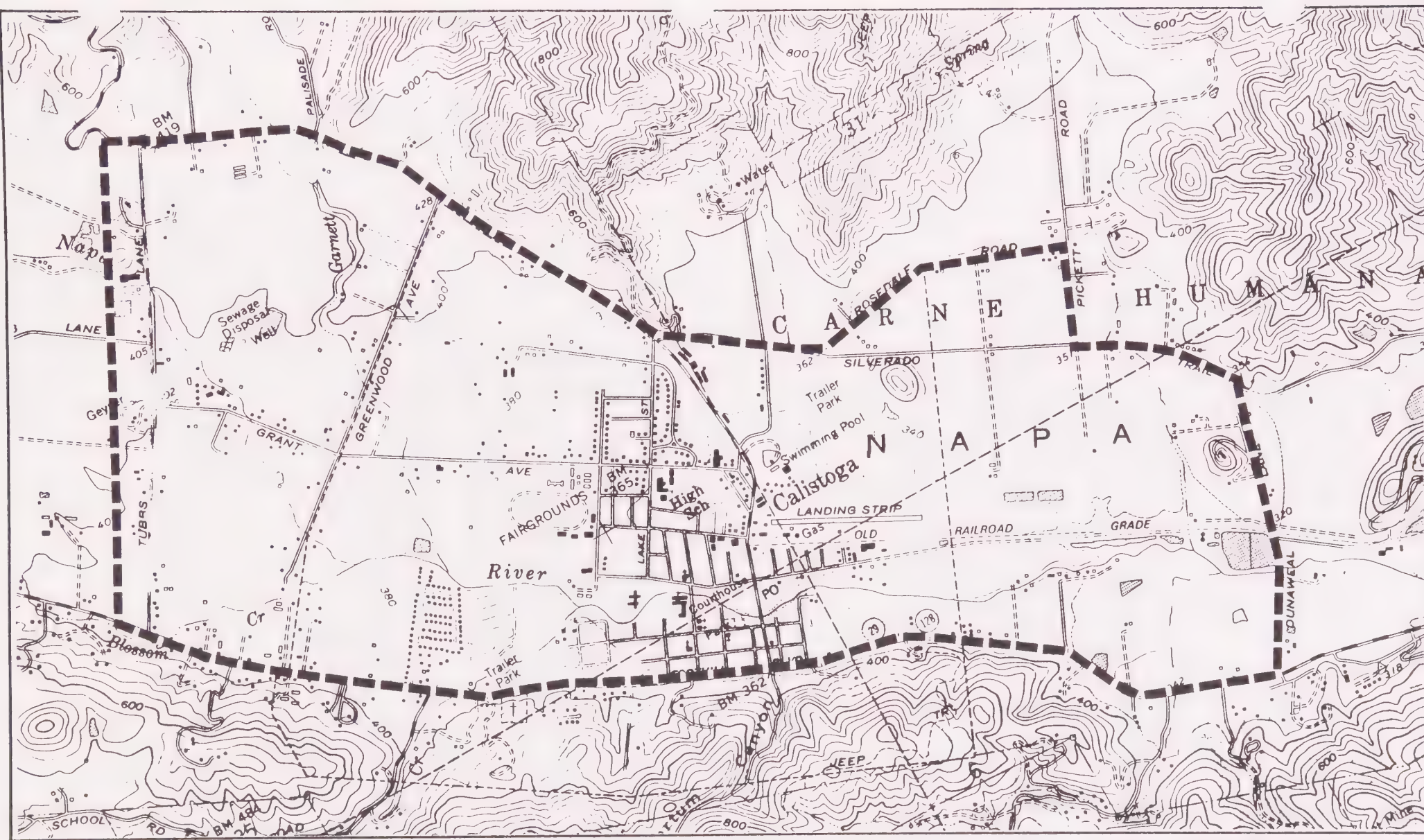
Napa County General Plan

The Napa County General Plan was adopted by the Supervisors on June 7, 1983, and most recently amended November 25, 1986. The Napa County General Plan summarizes County Planning Goals and Objectives; and establishes a balance between diverse and conflicting programs. It helps maintain the compatibility of economic and environmental objectives and provides guidance for the allocation of resources.

The Napa County General Plan includes the following elements: Land Use, Housing, Circulation, Scenic Highways, Conservation, Open Space, Seismic Safety, Safety, and Noise. Goals and policies that affect the City of Calistoga are provided below. The majority of these goals and policies are related to the concept of development occurring within city boundaries.

Land Use

Goal 1 To plan for agriculture and related activities as the primary land uses in Napa County and concentrate urban uses in the County's existing cities and urban areas.



Source: USGS Map-Calistoga Quad



USGS MAP

MASTER ENVIRONMENTAL ASSESSMENT
City of Calistoga



Exhibit 3

- Policy 4.4 Low and Moderate Cost Housing - The county will work with the cities to see that low and moderate cost housing is provided in proportion to the number of low and moderate income householders in Napa County.

Housing

- Policy 4.2 The County shall accommodate the distribution of population among the sub-areas of the County, giving preference to existing incorporated and urban areas in the construction of new housing.
- Policy 6.1 The County will encourage annexation to existing cities for proposed developments where urban services and facilities are required as opposed to creating special districts to accommodate such projects.
- Policy 8.1 In its land use policies the County will encourage the use of existing urban areas when planning for development for urban densities and services.

Circulation

- Policy 2d Continue efforts to improve Silverado Trail between Trancas Street and S.R. 29 in Calistoga as a two lane arterial...
- Policy 7b Hiking paths and bicycle lanes should be integrated with nonmotorized transportation facilities in the incorporated cities of the County.
- Policy 8g The County and Cities should continue providing bicycle storage and locking facilities near public buildings, and in parks and schools. Developers should be encouraged to provide such facilities in shopping and commercial areas. Bicycle parking should be provided free of charge. Funding sources such as bicycle license fees and meter revenues should be considered.

Napa County Growth Management System

Napa County adopted a Growth Management System as a result of a voter approved initiative (Measure A) in 1980. The Growth Management System allows a 118 dwelling unit allocation in Napa County unincorporated. This ceiling of dwelling units promotes city-centered urban development, and reduces the unincorporated area's total share of the regional housing needs.

REGIONAL PLANNING EFFORTS

In January 1989, the Association of Bay Area Governments (ABAG) published their Housing Needs Determination study. This study indicates that in 1988 there were a total

of 44,162 dwelling units in Napa County, of which 2,074 are located in the City of Calistoga. The study further relates that the City of Calistoga's housing need is 310 dwelling units by 1995.

The Association of Bay Area Governments, 1980 Regional Plan, includes the Napa Valley Planning Area. Although this subregional area's general conditions and issues are discussed, a regional position related to Napa Valley has not been delineated. The Executive Board has not taken action on goals and policies related to this subregional area.

In December 1987, the Metropolitan Transportation Commission prepared its Regional Transportation Plan for the San Francisco Bay Area. Major programmed roadway improvements near Calistoga include improvements to Highway 29 between Silverado Trail and Tubbs Lane. These improvements could include lane widening, channelization, and passing lanes.



LAND USE

LAND USE

INTRODUCTION

The purpose of this section is to analyze the existing land use setting in the City of Calistoga. This section includes a brief discussion of the current land use plans and policies and a discussion of land utilization within the General Plan Study Area.

EXISTING LAND USE PLANS

The current Land Use Plan was adopted on March 15, 1977 as a part of the Calistoga General Plan. The most recent element update, September 1983, was the revision of the Housing Element which was subsequently amended in 1985. Residential categories include: Rural Residential (0-1 Dwelling Unit per Net Acre), Lowest Density Urban Residential (0-5 Dwelling Units per Net Acre), Medium Density Urban Residential (5-12 Dwelling Units per Net Acre), and Highest Density Urban Residential (5-20 Dwelling Unit per Net Acre). Non-residential uses include: Town Center Commercial, Highway Commercial, Commercial-Industrial, Controlled Industrial, Professional, Planned Development, Medical Services, and Transitional. The 1977 General Plan is intended to be a community policy statement regarding the use or management of its physical resources. The current General Plan ensures development is sensitive to the small town character of the City while allowing for planned growth.

The current City Zoning Ordinance was adopted in 1979. Zoning Designations Include: Rural Residential District, Single-Family Residence District, Two-Family Residence District, Residential/Professional Office, General Commercial District, Planned Unit Development District, and Highway Commercial District. Designated special districts include: Agriculture Exclusive District, Hillside Residential District, and Transitional District.

The County of Napa Zoning Ordinance prescribes four zoning designations surrounding the Calistoga Study Area. These zones include: Agricultural Preserve to the north and east, Residential Country to the southeast, Agricultural Watershed to the south and west, a small parcel of Commercial Neighborhood at the northeast corner of Tubbs Lane and Highway 128.

Two zones are located within the Calistoga General Plan Study Area outside the City limits. These include Agricultural Preserve (AP) and Commercial Neighborhood (CN). The Agricultural Preserve zone is intended to be applied in the valley and foothill areas in which agriculture should dominate land use. It is suspected that land zoned AP near the City is not suitable for agricultural uses due to geothermal contamination. The CN classification is intended to serve residential areas with neighborhood commercial uses.

RESOURCE MANAGEMENT SYSTEM LAND USE POLICIES

In response to shortages related to water and wastewater treatment facilities and to allocate 500 feet of water received through the NBA project, the City of Calistoga, established a Resource Management System on September 18, 1984. The following is a brief discussion of the Resource Management System, as amended, and the Draft Resource Management System under consideration by the City of Calistoga.

The 1984 Resource Management System (RMS) has served as a method to control growth in order to respond to the water and wastewater facility shortages. The RMS officially began on October 15, 1984. It was the intent of the RMS to carefully phase development in a manner consistent with the provision of public improvements. It was also the intent of the RMS to maintain control over the character of development in order to avoid social, physical, and fiscal impacts. This was to be achieved by limiting growth to 2-3% annually, and to review discretionary permits in terms of their potential impact on the social, economic and environmental characteristics of the community.

The annual allocation system for the RMS establishes a schedule of water consumption for proposed developments. This schedule provides for approximately 20% of the water per year to be sold for qualified projects through the year 2003.

Projects are placed into two categories. Group I are those projects that do not require discretionary review for a use permit, subdivision, or development plans, and are located in zones R-R, R-H, R-1, R-2, R-3, and C, MHP, P-D, C-H, and T and P-M, or consist of four (4) or fewer dwellings, have five (5) or fewer employees, or involve less than 5,000 square feet of building area. A Group I project may not exceed 2.0 acre feet estimated annual average water need. Group I water allocations shall be on a first come first serve basis.

Group II are those projects which exceed Group I limitations and/or that would now require discretionary review for a use permit, subdivision, or development plans located in any of the R-1, R-2, R-3, C, R-R, MHP, P-D, C-H, T, P-M, and R-H zones. Group II projects are offered two times a year: November 1; and if there is still remaining water, May 1. Group II offers are reserved for six (6) months upon payment of fifty (50) percent of the water development service connection charge within sixty (60) days from the date of offer of water services by the City.

The water needs of any given project are determined by the standardized evaluation table and/or a special water needs evaluation. Table A provides the water use standards currently utilized by the City. A Draft RMS amendment is currently under review by the

TABLE A
WATER USE STANDARDS

Use	Unit	Acre Feet per Year
Boarding House	Per Bed	0.10 each
1 Bedroom	Per Living Unit	0.16 each
2 Bedrooms	Per Living Unit	0.32 each
3 Bedrooms	Per Living Unit	0.48 each
Transient Lodging	Per Living Unit	0.18 each
Commercial	Per Single Bath. Facility Plus Process Water Needs in Acre Feet/Year	0.06 each

Source: Resource Management System, June 2, 1987

City of Calistoga. This amendment could change the current water use standards as well as provide additional regulations for water and sewer hook-ups.

EXISTING LAND USE

The City of Calistoga is comprised of approximately 1,600 acres or 2.5 square miles. Exhibit 4 provides an aerial photograph of the existing land uses in the City. Exhibit 5 contains a coded graphic depicting existing land categories in the City. The City predominantly contains single family residential uses (60%). Approximate land use distribution acreage is as follows: Single Family 970, Vacant 298, Public Use 104, Commercial 72, Roadways 68, Agriculture 66, Multiple Family 15, and Industrial 7.

The Study Area outside of the City limits is comprised of approximately 600 acres or .93 square miles. The predominant existing land uses in the Study Area are Vacant and Single Family uses. There are also commercial uses adjacent to Tubbs Lane. These include: a winery, a building supply store, a retail store, a tourist site, and a substance abuse center.

PROPOSED LAND USE

The proposed land use plan for the City of Calistoga is depicted on the General Plan Land Use Map provided in Volume II of the General Plan Update. The Land Use Map indicates the proposed general distribution and location of the following uses: housing, business, industry, open space, agriculture, natural resources, recreation, enjoyment of scenic beauty, education, public buildings and grounds, solid and liquid waste disposal, and other uses.

FINDINGS

1. The small amount of General Plan Amendments to the 1977 General Plan reflects the City's support of the existing General Plan.
2. Areas classified Agricultural Preserve by the County within the General Plan Study Area may be unsuitable for agricultural uses.
3. The shortage of water and wastewater services is causing temporary growth moratoriums on growth in the City.
4. Approximately 60% of the existing land in the City of Calistoga is utilized for single family uses.
5. There are approximately 299 vacant acres in the City of Calistoga.

Exhibit 4
Aerial Photograph

Exhibit 5
Existing Land Use



POPULATION

POPULATION

INTRODUCTION

Understanding who lives in the community and how the population has grown and is expected to grow in the future is important to establishing the City's land use patterns and setting policies for the provision of housing and public facilities and services.

This section reviews historical population trends, current demographics, and population projections for the City and County, examines the significance of the City's transit population and its service area population.

HISTORICAL POPULATION GROWTH

The City's population is included in the U.S. Census Tract 2020 which is the same as the City boundary. Population figures from the 1950 and 1980 census are shown in Tables B and C. The figures between decades are the State Department of Finance annual estimates. These figures are published annually each January. The next U.S. Census will be in April 1990.

The City's population increased over the ten year period from 1970-80 from 1,882 to 3,879, an increase of 106 percent. Since then, the population reached 4,374 in 1988 indicating a leveling off of a 13 percent increase for the nine year period. Accordingly, the average annual population increase has dropped from 10 percent in 1970-80 to 1.4 percent annually in the period 1980-89.

Compared to Napa County population figures, as shown in Table C, the City of Calistoga's growth in 1980-89 corresponds to that experienced by Napa County. However in 1970-80 the average yearly growth of Calistoga (10.6%) was four times that of the County (2%) for the same period. This is largely attributed to the approval of three large mobile home parks and the Heather Oaks Subdivision (Riverlea).

POPULATION CHARACTERISTICS

Age and Sex Distribution

The City of Calistoga has a significantly higher proportion of persons over 62 years of age. In 1970, 42 percent was at least 62 years old compared with 16 percent for Napa County in the same year. Although the number of seniors increased by 748 between 1970 and 1980, the senior citizen percentage relative to total population dropped to 39 percent (compared to 18 percent for Napa County). This may account for the change in the Male/Female ratio since 1960 (50% Male/50% Female). As of 1980 the ratio is 48% Male to 52% Female. Senior Citizens represent a significant proportion of the City's population.

TABLE B
CALISTOGA HISTORICAL POPULATION GROWTH

Year	Population	Population Increase	Percent Increase
1950*	1418	--	--
1960*	1514	96	6.7
1970*	1882	368	24.0
1972	2062	180	9.6
1973	2130	68	3.3
1974	2230	100	4.5
1975+	2832	602	27.0
1976	2994	162	5.7
1977	3310	316	10.6
1978	3418	108	3.3
1979	3550	132	3.9
1980*	3879	329	9.3
1981	3964	85	2.2
1982	3973	9	0.2
1983	4022	49	1.2
1984	4049	27	0.7
1985	4066	17	0.4
1986	4218	152	3.7
1987	4340	122	2.9
1988	4374	34	0.8
1989	4386	12	0.3

Sources: State Department of Finance

Notes: * U.S. Census
+ 1975 Napa County Special Census

TABLE C

POPULATION OF CALISTOGA, NAPA COUNTY AND BAY REGION

Calistoga

Year	Population	Percent Change
1960	1514	--
1970	1882	24.0
1980	4374	12.7

Napa County

Year	Population	Percent Change
1960	65,890	--
1970	79,140	20.0
1980	99,199	25.0

Bay Region

Year	Population	Percent Change
1960	3,638,939	--
1970	4,630,311	27.2
1980	5,179,784	11.9

Source: 1960, 70 and 80 U.S. Census

The 18-64 years of age category in Calistoga is proportionately smaller than the same age group in Napa County and the State.

Calistoga's population characteristics are undergoing changes which should be revealed in the upcoming 1990 Census. Some of the forces which influence the population characteristics are the limited job and housing opportunities for young people. Many move out of the area for this reason. Second, the slow growth rate means the population is, on the average, growing older. Newcomers to Calistoga appear to be young families and retired seniors. They are attracted by the lower housing costs (than the Bay area) and the small town rural atmosphere.

Ethnic Composition

Calistoga's population is 88 percent white. The percentages of different ethnic groups are represented in Table D. The most numerically significant minority population is that made up of persons with Hispanic surnames.

TABLE D
CALISTOGA ETHNIC BREAKDOWN OVERALL

Race	1960	1970	1980
White	99%	99%	88%
Black	1%	<1%	<1%
Other*	<1%	<1%	12%

Source: 1960, 70 and 80 U.S. Census

Note: * Includes Hispanic

As depicted on Table E the percentage increase of Hispanics in Calistoga from 1970 to 1980 has been 368% compared to Napa County's increase of slightly over 100%. Of the City's Hispanic population, 80% are in the low and moderate income group; and, the vast majority live in the City's poorest housing, mainly rentals in overcrowded conditions. One reason for the recent increase in the Hispanic population is the Napa Valley's agricultural businesses, related services, and the availability of affordable housing opportunities.

TABLE E
HISPANIC ORIGIN IN CALISTOGA AND NAPA COUNTY

	1970	Percentage	1980	Percentage
Calistoga	149	8.0	698	18.0
County of Napa	4071	5.0	8636	9.0

Source: 1970 and 80 U.S. Census

Household and Family Composition

A household is any group living together in a residence, whether related or unrelated. Over the years average household size has steadily declined nationwide. In 1970 average household size in Calistoga was 2.08 persons; the figure increased to 2.11 persons in 1980. In 1989, the average household size was calculated at 2.13 by the California Department of Finance. ABAG predicts by 1990 it will drop to 2.1 and 1.96 by 2005. Assuming this trend will continue it will be 1.95 by 2010.

The total number of households in Calistoga has increased from 878 in 1,970 to 1,791 in 1980 and 1880 in 1985. In 1980 43% (788) of the total households were headed by elderly persons. Five (5)% or 99 households were female heads of households (no spouse).

Calistoga Service Area

Census Tract 2019 takes in the surrounding areas outside the City limits and encompasses a greater portion of the population serviced by the City of Calistoga. The 1960 U.S. Census reported the population as 981 for the area. In 1970 the population dropped to 954 showing a loss of 27 people. During this same period, the City of Calistoga population increased by 368 people. In 1980 the population of this area increased to 1,252. This indicated a 31% increase for the 1970-80 period and an average of 3% a year. The City also experienced a large growth rate of 101% for the 1970-80 period. Population characteristics for Census Tract 2019 are shown in Table F. The population of the surrounding areas contributes to the need for services in Calistoga and therefore creates a demand on land use.

TABLE F
CENSUS TRACT 2019 POPULATION CHARACTERISTICS

	1960	1970	1980
Census Tract 2019	981	954	1,252

Source: 1960, 70, and 80 U.S. Census

Calistoga's economy is predominately influenced by tourism. This brings in a number of persons into the community, especially during the summer months. The community had 476 visitor beds in 1988 and an annualized average occupancy of 43%. It is assumed that an additional transit population of 356 persons are added to the City's population.

Population Projections

There are a variety of approaches that can be taken to project permanent population growth in Calistoga through the year 2010. Table G is a comparison of population projections based on the following information.

1. Apply actual average growth rate from 1980-89.
2. 1977 Calistoga General Plan Full Build-out.
3. Resource Management System 2.5-3.0%.
4. ABAG's Growth Projections extrapolated to 2010.

Average Growth Rate from 1980-89

The actual average growth rate (continuous) for Calistoga during the period from 1980-89 is calculated to be 1.4%. If this same growth rate is projected through the year 2010, Calistoga's population would be 5,954. This is equivalent to an additional 71 persons per year or 34 housing units per year.

TABLE G
COMPARISON OF POPULATION PROJECTIONS

Method	2010	Annual Growth Rate
Existing Growth	5954	1.4%
1977 General Plan	7162	2.8%
RMS	7611-8225	2.5 - 3.0%
ABAG (modified)	6711-7245	2.7 - 3.3%

Source: Calistoga Planning Department

1977 Calistoga General Plan Full Buildout

A vacant and underutilized land inventory was prepared indicating land suitable for residential development in accordance with the 1977 Calistoga General Plan.

This analysis indicates that an additional 1,322 housing units are possible within the current City boundary. Assuming 2.1 persons/household, an additional 2,776 persons could be added to the present population. This yields 7,162 persons at full buildout. This is a 63% population increase if accomplished by the year 2010 or an annual increase of 2.8%.

Resource Management System 2.5-3.0%

The City's allocation of water from the North Bay Aqueduct project will allow for 16 acre feet per year for new development. This allocation will provide for an approximate equivalent of an additional 2,250-2,700 persons over the 20 year period commencing in 1984 or 112-134 persons per year. Projected equivalent population at the year 2010 is 7,611 - 8,225.

ABAG's Growth Projections Extrapolated to 2010.

ABAG has made population projections for Calistoga through the year 2005. Using their growth assumptions over the next five (5) years, a total population of 7,245 is projected. The initial household growth period between 1988-1995 was revised downward from 493 to 310 at the request of the City of Calistoga due to sewer and water limitations. No growth is anticipated until 1990. Reducing the growth will result in a population by 2010 of 6,711. This is a 2% growth rate (continuous). The ABAG projections do not allow artificial growth limitations or political considerations and assume that by 1990 sewer and water limitations will be eliminated.

FINDINGS

1. Calistoga's population increased rapidly in the mid 1970's with the approval of three mobile home parks and a major subdivision. Since then, the average population growth has dropped to 1.4%. Calistoga has been able to assimilate newcomers without changing its basic character because of a slow growth rate. Rapid growth in the future could jeopardize the existing social cohesiveness of the community. Therefore, the general plan will need to address the timing and pace of future population growth.
2. Population projections range from approximately 6,000 to 8,200 depending on methods and assumptions used. Calistoga is expected to remain a small town at the end of the 20 year planning horizon.
3. The County agriculture preserve and policies to encourage urban development into existing cities significantly limits population growth outside the existing city limits. Since Calistoga controls its water and sewer systems, the City of Calistoga has direct control over the timing and pace of future population growth within the Calistoga planning area. The chief tools to control growth are its annexation powers, public service extension decisions, water and sewer allocations, general plan policies, and zoning.
4. Calistoga's population has a significant number of older residents. The most recent demographic change has been the increase in the Hispanic population.
5. The surrounding service area population, tourism, and transient population effectively increase the total population of Calistoga. This may impact service demand, social characteristics and land use decisions.
6. The 1990 Census in Calistoga may not reveal significant changes in absolute numbers but more likely reveal changes in ratio of households ages, persons per household, and ethnic diversity. The age and ethnic structure of the community is important in making decisions about the housing mix and provision of transit, medical, educational, recreational, and social services.



HOUSING

HOUSING

PURPOSE AND SCOPE

This section of the MEA focuses on housing in Calistoga. Its purpose is to identify local housing needs, special needs groups, and available resources to meet those needs. Based on this information, Goals, Policies, and Programs will be prepared subsequently which will guide housing development.

PLANNING AREA DEFINITION

The documentation of housing needs and characteristics presents data for the incorporated limits and study area as described in the Regional and Local Setting of this document. The U.S. Bureau of the Census has defined one Census Tract for the City, 2020. The Tract boundaries are coterminous with the City's incorporated limits and Sphere of Influence. Census Tract 2019 surrounds Tract 2020 on all sides. Information on Tract 2019 will be considered in the analysis, as a portion is in the Study Area.

The Calistoga Study Area is located in Napa County's most prominent geographic feature, the Napa Valley. In addition to the City of Calistoga, the Valley contains three other incorporated jurisdictions, St. Helena, Yountville, and Napa. Urban development is generally concentrated in these cities.

The County's housing market is dominated by the Valley's largest urban area, the City of Napa and its urban fringe. Table H presents a comparison of dwelling unit types in each of the incorporated areas.

Overall, in 1980, the City of Calistoga accounted for approximately 7% of the total County housing stock in Napa County. The City of Napa accounted for about 80% of the County housing stock.

HOUSING STOCK

Over time, the City of Calistoga's housing stock has increased substantially. Table I presents the change in population, housing units, and household size for the period 1960 to 1989. The largest increase in housing units, 77%, coincides with the largest increase in population, 106%, which took place between 1970 and 1980. Household size has generally decreased over the last 29 years to a present level of 2.13. In 1980, there were approximately 1,825 households in Calistoga (1980 U.S. Census). Exhibit 6 presents a bar graph of the increase in units since 1960.

TABLE H
DWELLING UNIT BY TYPE OF STRUCTURE

Jurisdiction	Single-Family 2-4 Plex		5 Plex +	Mobile Home	Total
City of Napa	14,914	1,968	2,486	850	20,218
Yountville	475	32	55	229	791
St. Helena	1,510	104	537	96	2,247
Calistoga	1,085	123	270	426	1,904
TOTAL					25,160

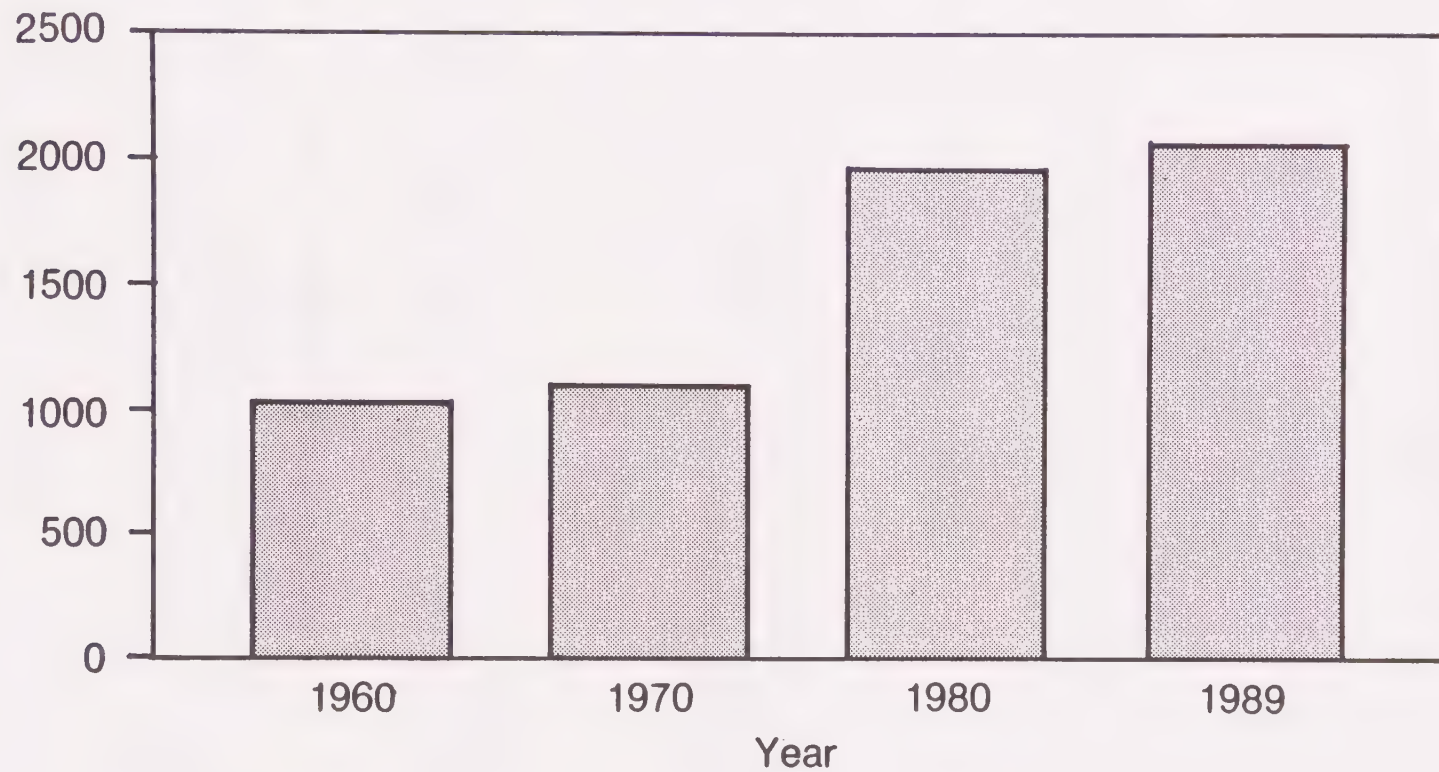
Source: 1980 U.S. Census

TABLE I
POPULATION AND HOUSING INCREASES

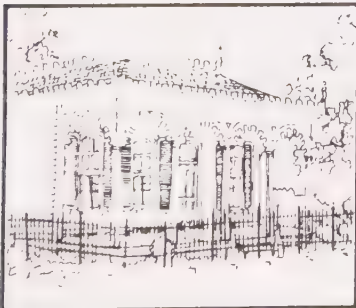
Characteristic	1960	1970	% Change	1980	% Change	1989	% Change
Population	1,514	1,882	24%	3,879	106%	4,386	13%
Household Size	2.54	2.69	6%	2.12	-21%	2.13	.5%
Housing Units	1,042	1,106	6%	1,964	77%	2,074	5.6%

Sources: 1960, 1970 and 1980 U.S. Census
California Department of Finance, January 1989

Number of Housing Units



Source: US Census & California Department of Finance



HOUSING BAR GRAPH

MASTER ENVIRONMENTAL ASSESSMENT

City of Calistoga



Exhibit 6

In 1980, The City contained approximately 1,964 housing units. 1,904 of the units were year-round housing units. In January 1989, the number of units increased to 2,074 with 2,022 being occupied on a year-round basis. Table J summarizes the number of housing units by type in 1980 and in 1989 the most recent estimate for the City. As the housing unit figures indicate, the City of Calistoga contains a variety of housing types with a dominance of single family dwellings.

Census Tract 2019 contained a smaller amount of housing units in 1980 though it occupies a larger area. Table J summarizes the unit types for Tract 2019. A predominance of single family units also exist in Tract 2019.

New construction within Calistoga was minimal in 1987 and 1988 due to the moratorium on water and sewer hookups. During 1987 to 1988, 31 single family units were built. The number and type of units built in the 1988 to 1989 year include nine single family detached homes and one 4-plex structure.

HOUSEHOLD CHARACTERISTICS

Tenure and Length of Residence

Table K summarizes tenure and length of residence, and overcrowding for the planning area. A majority of residents in 1980 were fairly recent arrivals to the City of Calistoga and surrounding area, with most households having a length of residence between two and five years. A majority of the units are owner occupied in both tracts.

Overcrowding

The Census defines overcrowding as more than 1 person per room. Approximately 7% of a total 1,791 occupied housing units in Tract 2020 reported more than 1.01 person per room. Of 483 occupied housing units, 4% reported more than 1.01 persons per room in Tract 2019.

Household Financial Characteristics

As Table L indicates, the median income for Tract 2020 and Tract 2019 differed in 1980. The median income for the City of Calistoga equalled approximately half of the median income of Tract 2019, \$10,873 versus \$20,437. Table M summarizes the current incomes necessary to qualify for affordable housing built with subsidies.

A household classified as very low income earns 50% of the median income. A low income household earns between 50% and 80% of the median income. A moderate income household earns between 80% and 120% of the median income. For a household

TABLE J
HOUSING UNITS

Unit Type	TRACT 2020		TRACT 2019
	1980	1989	1980
Single Family (1)	1,085	1,210	452
2 to 4 Plex	123	103	89
Multi-Family (2)	270	313	11
Mobile Home	426	448	--
TOTAL (Year-round)	1,904 (3)	2,074	552

Source: 1960, 70, and 80 Census
Department of Finance, January 1989

Notes:

- (1) Detached and attached units.
- (2) Includes structures with 5 or more dwelling units.
- (3) The number of Year-round units on Table H-1 of the Census is reported as 1,911. The Total above appears on Table H-7 of the Census and is based on a sample.

TABLE K
HOUSEHOLD CHARACTERISTICS

	TRACT 2020	TRACT 2019
CHARACTERISTICS	1980	1980
Average Household Size	2.12	2.54
Length of Residence		
1 Year	512	79
2 - 5 Years	679	171
6 - 10 Years	374	147
11 + Years	226	37
Persons Per Room		
1.00 or less	1,666	463
1.01 to 1.5	27	17
1.51 or more	98	3
Owner Occupied Units	1,090	348
Renter Occupied Units	701	135
Owner - Occupied Households	1,144	321
Renter - Occupied Households	681	167

Source: 1980 U.S. Census

TABLE L
FINANCIAL CHARACTERISTICS

	TRACT 2020	TRACT 2019
	1980	1980
Median Income	\$10,873	\$20,437
Mean Income	\$22,519	\$23,918
Median Contract Rent	\$185	\$178
Median Gross Rent	\$209	\$187
Median Monthly Homeowner Costs		
With Mortgage	\$430	\$540
Not Mortgaged	\$92	\$135

Source: 1980 U.S. Census

TABLE M
MAY 1989 INCOME LIMITS
NAPA COUNTY

Standard	NUMBER OF PERSONS IN FAMILY							
	1	2	3	4	5	6	7	8
Very Low Income	13,600	15,500	17,450	19,400	20,950	22,500	24,050	25,600
Lower Income	21,750	24,850	27,950	31,050	33,000	34,950	36,900	38,800
Median Income	27,150	31,050	34,900	38,800	41,250	43,650	46,100	48,500
Moderate Income	32,600	37,250	41,900	46,550	49,450	52,400	55,300	58,200

Source: Department of Housing and Community Development, May 1, 1989

TABLE N
1980 AND AVERAGED INCOME PROPORTIONS

Income Group	City	County	Region	Averaged
Very Low	48%	26%	23%	32%
Low	19%	18%	16%	18%
Moderate	17%	21%	21%	20%
Above Moderate	16%	35%	40%	30%

Sources: ABAG
City of Calistoga, Memorandum, ABAG Housing Needs Determinations

of four persons, the median income limit is estimated to be \$38,800 annually. The same size household classified as very low income, earns approximately \$19,400. These figures are not comparable to the Census figures since the median income in the Census is not broken down by persons per household. Table N indicates the percentages of households in the City in each category. As indicated, the largest income group in the City consists of very low income households, 48%.

The City's percentages are modified by County and Regional percentages to promote a more equitable distribution of housing opportunities and to avoid further compaction of communities with higher concentrations of low income households. The City's very low income percentage is adjusted downward to 32% reflecting the fact that it has a higher proportion of lower income households than the County or region. Similarly, the above moderate income percentage is adjusted significantly upwards to account for the lower proportion of these households in the City. The averaged percentages are then used to project housing needs by income category. Projected housing needs are discussed further in the latter portion of this section.

According to State law, a lower-income household that pays more than 25% of its income for housing is living in unaffordable housing. The federal government's measure of overpayment is 30% of a household's income. ABAG has calculated the percentages of low income homeowners and renters that are overpaying for housing based on the 1980 Census. Table O indicates that 22% of Calistoga's low income homeowners are overpaying for housing services. In addition, 68% of the City's low income renters are overpaying for housing services. Overall, 45% of the City's low income residents overpay for housing services.

The median contract rent equalled \$185 in 1980. Current ranges of contract rents are provided in Table P. These figures assume that the unit is of average to upgraded quality. As indicated, rental prices range from a minimum of \$375 to \$1,000 a month. Local Calistoga realtors describe the rental unit market as "tight." Units are usually rented quickly.

Values of single family homes have risen since the 1980 Census. The median value of owner occupied units in the City equalled \$77,000 in 1980. A current price estimate (October, 1989) provided by St. Helena Realty is as follows:

3 Bedroom/2 Bath Home	\$155,000 to 165,000
-----------------------	----------------------

Rents and current selling prices are not directly comparable to Census figures which did not specify rents and values for different sizes and types of units.

TABLE O
OVERPAYMENT, CITY OF CALISTOGA

Characteristic	Number
# of Low Income Households Owning	589
# of Low Income Households Renting	554
# of Low Income Households Overpaying (Owners)	131
# of Low Income Households Overpaying (Renters)	375
Proportion of Low Income Owners Overpaying	0.22
Proportion of Low Income Renters Overpaying	0.68

Source: ABAG, Housing Needs Determinations, September 1988

TABLE P
1989 CONTRACT RENTS

Unit Type	Rental Price Range
Single Family Home	
1 Bedroom	\$500/month
2 Bedroom	\$625 - \$650/month
3 Bedroom/2 Bath	\$850 - \$1,000/month
Apartments	
1 Bedroom	\$375 - \$425/month
2 Bedroom	\$575 - \$625/month

Source: St. Helena Realty, October 1989
Beck and Taylor, November 1989

SPECIAL NEEDS GROUPS

Handicapped

Within the Census, a disabled household is one in which the householder has an employment-related or transportation-related disability. In California, approximately one in seven of the state's households had a disability. In general, disabled households have the following characteristics (Statewide Housing Plan 1987):

- Tend to be small
- Tend to be elderly
- Are predominantly low income
- Move much less often
- Have below average housing costs, but, nevertheless, pay higher percentages of income for housing

In Calistoga, 44 persons aged 16 to 64 years reported a public transportation disability, and 44 persons in the same age group reported a work disability. Persons 65 years and older with a public transportation disability totalled 56. In total, persons with either disability represent 2.3% of Calistoga's population.

In Census tract 2019, which surrounds the City, fewer persons reported a disability. Between the ages of 16 and 64, seven persons reported a public transportation disability and seven reported a work disability. Twenty persons aged 65 years and over reported a public transportation disability.

In order to gather more current estimates regarding the handicapped in the County of Napa and City of Calistoga, the following agencies were contacted:

- Napa County Social Service Human Service Directory
- St. Helena Social Service Office
- Catholic Napa Valley Family Housing
- Napa Action Community
- Napa County Human Services
- State Employment Development Department
- Napa Valley Housing Authority
- Social Security Administration, County of Napa
- State Department of Rehabilitation

The Napa Valley Housing Authority gives 46 After Care certificates/vouchers for the disabled in Napa County. More specific information related to the City of Calistoga is not available (phone interview, Dave Dickson, Napa Valley Housing Authority, September 4, 1990).

As of 1987, 430 persons were receiving disability income in Napa County (phone interview Nancy Vice, Social Security Administration, County of Napa, August 23, 1990). No specific information was available for the City of Calistoga.

The Draft Housing Opportunity Strategy prepared for the Napa Valley Housing Authority indicates that ..."the lack of housing geared for special needs populations such as the homeless, mentally ill and physically and developmentally disabled was highlighted by the Napa Housing Alliance and County Staff as being a significant problem."

Currently, the following programs for the handicapped are provided in the County of Napa:

<u>Organization</u>	<u>Service</u>
County Social Service Service Human Service Directory	Services for the physically handicapped
Napa Action Community	Meals on Wheels Food Bank
State Dept. of Rehabilitation	Vocational Aid Directory of Rehabilitation Places and Services to the handicapped

No social programs for the handicapped are located in the City of Calistoga. No housing developments have been built specifically for disabled community members. Programs to aid in the development of housing for the handicapped in Calistoga are listed in the Policy and Program Document, Volume II of the General Plan Update.

Elderly

Within State law, elderly is defined as age 60 and older. Almost 25% of the households in California are made up of the elderly. General characteristics of elderly households are as follows (Statewide Housing Plan 1987):

- Have a higher homeownership rate
- Are predominately low income
- Tend to live in small households

- Are more likely to be nonfamily households
- Move much less often
- Have much lower overcrowding rates

With increasing age:

- Household income, household size and homeownership begins to fall
- Housing affordability problems begin to increase

The elderly make up a major percentage of the population in Calistoga. As estimated in the 1970 Census, they represented 42% of the population. This percentage decreased slightly in 1980 Census estimates to 39%. Further discussion is provided in the Population section of the MEA. The 1980 Census reported 1,572 persons aged 60 years and over within the City. In Tract 2019, 311 persons were aged 60 years and over.

The elderly tend to live in the City's mobile home parks. With increasing age, many elderly need services provided by convalescent care facilities. There is a shortage of space in the existing facilities. To find these services, the elderly are forced to move to different localities (Richard Spitler, Planning and Public Works Director, November 7, 1989). In 1980, 629 of 812 housing units were occupied by elderly home owners (65-years and over).

Of 93 Calistoga families earning below the poverty level in 1979, 16 families or 17% had a householder aged 65 years and over. Of 485 persons with incomes below the poverty level in 1979, 142 or 29% were aged 60 years and over.

In order to gain more current estimates regarding the elderly in the County of Napa and the City of Calistoga, the following agencies were contacted:

- County Social Service, Human Service Directory
- St. Helena Social Service Office
- Catholic Napa Valley Family Housing
- Napa Action Community
- Napa Valley Housing Authority
- Social Security Administration
- Volunteer Center Housing

No quantitative descriptions of elderly housing needs were provided.

The Draft Housing Opportunity Strategy prepared for the Napa Valley Housing Authority includes results of interviews with several Napa County housing providers, municipal staffs, local realtors elected officials and others. Results indicate that those interviewed cited senior housing less frequently as a pressing need ". . . perhaps because senior

developments have been built in Napa in the last several years" (Draft Housing Opportunity Strategy Napa Valley, Housing Authority, June 1, 1990).

Programs for seniors are listed in the 1989-90 Guide for Seniors distributed by the Volunteer Center of Napa County, Inc. Services available within the City of Calistoga include a Nurses Registry, Health Screening Services (Community Presbyterian Church), Seniors Meetings, and Creative Living Center meetings at the Calistoga Community Center. No senior housing complexes are located in Calistoga.

Statistics discussed above indicate that the elderly make up a significant part of Calistoga's population. Given the shortage of board and care facilities, convalescent care facilities, as well as affordable rental and sale units, senior housing is a pressing need for the City of Calistoga.

Large Families

Large households, defined in the 1980 census as households with five or more persons, have special housing needs. Large households tend to have difficulties purchasing housing because large housing units are rarely affordable and rental units with three or more bedrooms may not be common in many communities (LHEAP, December 1989).

In general, household size in Calistoga has remained fairly low. Household size is summarized on Table I. In 1980 the average persons per family equalled 2.70. Persons per household is expected to decrease over the next fifteen years to 1.96 by the year 2005 (Projections '87 ABAG). In Calistoga, 109 units contained five or more persons. The median number of persons per owner-occupied units equals 1.87. The median number of persons in renter-occupied units is slightly lower at 1.79 (1980 U.S. Census). Average household size in Tract 2019 is slightly higher at 2.54 persons (1980 U.S. Census).

As a subgroup, Calistoga's Hispanic population has a higher household size and a higher family size than the general population. In 1980, household size for Hispanic residents equalled 3.67. The number of persons in a family on average equalled 4.15 (1980 U.S. Census).

Farmworkers

Housing for farmworkers presents problems due to rural locations, seasonal nature of the work, and the need for mobility on the part of many of the workers. Of California households, .9% included farmworkers. This only represents farmworkers within a household at the time of the Census and underestimates farmworkers within the State. The following are distinctive characteristics of California's farmworker households (Statewide Housing Plan 1987):

- They have low homeownership rates
- They have large household sizes, and renter households are as large as those of owners
- Married couples strongly predominate among both owners and renters, and most families include minor children
- They live disproportionately in the housing which is in the poorest condition
- They tend to have low incomes and have high rates of poverty
- They have high rates of overcrowding

The 1980 U.S. Census reported that 225 persons in Calistoga were employed in farming, forestry, and fishing occupations. Many who work in farming are of Hispanic descent. As discussed in the Population section of the MEA, the Hispanic population in Calistoga has increased from less than 8% in 1970 to 18% in 1980. The increase in the Hispanic population is a result of opportunities in agricultural businesses and related services. 80% of the Hispanic population is in the low and moderate income group. The majority live in low quality rental housing in overcrowded conditions. In Tract 2019, 126 persons or 10% of the population are of Hispanic descent (1980 U.S. Census).

At peak times during the harvest season, as many as 300-400 migrant farm workers come to the City. Units are rented to them for short periods of time, five to six weeks. During this time they live in overcrowded conditions in order to afford the rental price which is often up to \$500 per month. These units are not normally rented on the general housing market and are not advertised (Ernest Volkman, phone interview, November 14, 1989).

Further information on farmworkers was gained through the Napa Valley Housing Authority. A preliminary survey of farmworkers in the Valley estimates that at the peak harvest time, 1,000 single male migrant farmworkers need housing (phone interview, Dave Dickson, Napa Valley Housing Authority, August 24, 1990). The Department of Housing and Community Development estimated 730 migrant farmworkers during the peak harvest month of September (State of California, Department of Housing and Community Development, 1988).

The Draft Housing Opportunity Strategy prepared for the Napa Valley Housing Authority (June 1, 1990) recommends that "[t]he Authority's first farmworker project should be targeted to year-round farmworker families, and due to proximity to the job site, be located in either Calistoga or St. Helena . . . Subsequent efforts can focus on the housing needs of single men, and perhaps be located in the unincorporated County, near or at the job site."

Programs regarding farmworker housing in Calistoga are included in the General Plan Update Volume II: Policy and Program Document.

Female Heads of Households

Approximately 10% of California's households are made up of a female householder with children. Female householders with families have the following characteristics (Statewide Housing Plan 1987):

- They have a low homeownership rate
- They tend to be younger
- Families with children predominate
- They have low incomes and a high poverty rate
- Overcrowding rates are high
- They pay high percentages of income for housing

The 1980 Census reported 98 female headed households in Calistoga, 62 of which had children under 18 years of age. The 1983 Housing Element reported that 5.4% (99) of Calistoga's households consisted of female-headed households. In Census tract 2019, 30 households consisted of females with no husband present, 15 of which had children under 18.

Of 93 families below the 1979 poverty level in Calistoga, 22 households or 24% were female headed households with children under 18 years of age. In tract 2019, 4 of 24 families below the poverty level in 1979 were female headed households with minor children. This is 16% of the low income families within the tract.

Homeless

The homeless include single persons and persons with families who spend the night in emergency shelters or hotel or motel rooms with the aid of emergency shelter vouchers, as well as those actually on the streets. The 1987 Statewide Housing Plan includes an estimate of between 50,000 to 75,000 homeless persons in California.

Prior to assisting homeless persons and families find employment and obtain housing, transitional assistance in the form of emergency food or shelter may be needed. No formal shelters for the homeless exist in Calistoga. No homeless persons have remained in the City for long periods of time, but tend to seek shelter for a few days. Over a year, 40 persons and more may seek shelter especially at churches. If a shelter existed in Calistoga, it is estimated that it would be full every night (Ernest Volkman, phone interview, November 14, 1989). Every locality with an identified unmet need of one or more homeless persons must identify adequate sites for emergency shelters and transitional housing including existing facilities which can be converted to accommodate that need (Government Code Section 65583(c)(1)).

Transients in Calistoga tend to be males, although a couple with a child or two has sometimes sought shelter. Single transient women have not been seen (phone interview, Ernest Volkman, November 28, 1989).

HOUSING STOCK CONDITIONS

Table Q summarizes housing stock conditions for the planning area. A majority of the units were constructed subsequent to 1960, approximately 59% for Tract 2020 and 47% for Tract 2019. Units lacking heating fuel were few, approximately .5% in Tract 2020. Units lacking complete plumbing for exclusive use equalled approximately 1% of all year round units in both Census tracts.

A more recent study in the City of Calistoga indicates that the housing stock condition may still need improvement. In 1984, a Sidewalk Survey was conducted to assess the condition of Calistoga's housing units in a specified target area which contained 1,178 units. 967 or 82% of the units were surveyed. Of the 967 units, 508 units were classified as Substandard Major and Substandard Moderate. This survey was updated through record and field checks in 1987 and included the entire City in the analysis. In 1987, the total number of Major and Moderate Substandard units in the target area equalled 542. Of these, 365 were listed in need of "major" repairs. This definition would include units in need of replacement (memorandum, Richard Spitler to STA Planning, Inc., September 4, 1990).

A demographic survey of the substandard units was carried out in 1987. Of the 542 units identified as substandard, 210 were given questionnaires. Results are presented in Table R. Approximately 25 homes lacked heat. In addition, many homes cited other building problems concerning plumbing, wiring and foundation among others. The results of this survey are not directly comparable to Census figures since the total number of respondents, 210, is a small fraction of the total households in the City. Survey results are, however, a more recent indicator of housing stock condition.

The City maintains a housing rehabilitation program funded by the California Community Development Block Grant program. The grants are awarded based on need. The Sidewalk Survey and Demographic Survey demonstrated the City's need to upgrade many units.

On April 12, 1989, the Daily Calistogan reported that during the period of June 1985 to December 1988, approximately \$579,000 was spent to rehabilitate 22 units. Of these, half of the homeowners were classified as low income. 52% of the low income group were Hispanic and 47% were female heads of households. One percent of the applicants were classified as handicapped.

TABLE Q
HOUSING STOCK CHARACTERISTICS

	TRACT 2020	TRACT 2019
CHARACTERISTIC	1980	1980
Year Structure Built		
1939 and earlier	367	148
1940 to 1959	415	142
1960 to 1979	1,122	262
Units Lacking Heating Fuel	8	--
Lacking Complete Plumbing for Exclusive Use (Year Round)	22	6

Source: 1980 U.S. Census

TABLE R
1987 SURVEY RESULTS, CITY OF CALISTOGA
HOUSING STOCK CHARACTERISTICS (1)

CHARACTERISTIC	NUMBER OF SURVEY RESPONDENTS
Homes without Heat	25
Building Problems	
Plumbing	51
Wiring	45
Walls	52
Roof	48
Foundation	38
Insulation	64
Heating System	66
Stairway	32
Windows	40
Doors	53
Need More Room	78

Source: City of Calistoga Housing Rehabilitation Department Updated Demographic Survey, March 1987

Notes:

(1) Total of 210 responses to the Survey.

Overall, the Program has rehabilitated approximately 112 units since its beginning in 1984. Property owners of rental units must agree to rent to low and moderate income households for the term of the loan, usually 15 years. Most of the eligible units have been rehabilitated. Over the life of the program, 125 houses will be renovated (Daily Calistogan, April 7, 1989). The program will reduce in intensity in June of 1990 since additional grants from the State of California are not anticipated (Richard Spitler, Planning and Public Works Director, November 7, 1989).

Some problems with CDBG loan term requirements have been identified regarding retaining rental units for prior occupants. Subsequent to rehabilitation, unit owners may allow occupants to return for a month or two but then terminate the families without cause. Future CDBG loan agreements or other similar types of rehabilitation assistance agreements should include clauses which require unit owners to retain the families that occupied the units prior to rehabilitation (phone interviews, Maria Rodriquez - Welch, December 11, 1989).

Demolitions have been few in the last two years. In 1988, nine structures in the 2 to 4-plex range, which housed 26 units, were demolished. These units were not included in ABAG's estimate of current housing needs for the period 1988-1990. ABAG's formula does not account for demolitions (phone interview, Raymond Brady, ABAG, August 21, 1990). In 1987, one single family detached unit was demolished and 7 units in the 2 to 4-plex unit type were demolished. This information was provided by the California Department of Finance. Calistoga's Housing Department reports that in November 1988, 32 substandard units were demolished which displaced 150 people. Those displaced have been assimilated slowly (phone interview, Pat Rusch, October 6, 1989).

VACANCY RATES

The current overall vacancy rate for the City in 1989 equals 2.51% according to the Department of Finance. The vacancy rate includes seasonally occupied units which may tend to inflate the vacancy rate.

Current (1989) vacancy rates for rental units in Calistoga equal less than 1% according to Saunders Real Estate. This is the vacancy rate for the 60 units that the office manages. The office never has a vacancy for more than two weeks. Mt. St. Helena Realty manages 20 units of which less than 5% are vacant at a maximum at any one time. These units are also rented very quickly. Vacancy rates for all rental units in the City are not available.

Though rental vacancy rates are low overall, seasonally it may vary. Vacancy rates tend to be higher in December. The housing market is driven in part by transient workers (phone interview, Robert Beck, Beck & Taylor, Napa Valley Realty, November 21, 1989).

EXISTING AND PROJECTED HOUSING NEEDS AND CONSTRAINTS

Population Trends

Table G in the Population section summarizes several different growth scenarios. Estimates range from 5,954 to 8,225 additional persons by the year 2010. In any case, at a minimum, 1,558 persons will be added to Calistoga's current population of 4,386. Due to water and sewer capacity constraints, a maximum of 54 units per year can be provided until the year 1995. At current average household sizes, this will house approximately 115 persons a year. ABAG's population projections, one growth scenario in the Population section of the MEA, were used in determining Calistoga's housing needs.

Employment Trends

ABAG predicts steady or increased number of jobs in most employment categories. Table OO in the Employment section of this document indicates the employment projections up to 2005. In general, job opportunities will increase in manufacturing and wholesale, retail, and service sectors. Agricultural and mining jobs will remain fairly steady until 2005 when they will decline slightly. Increased employment opportunities in Calistoga may contribute to increases in population. This information from Projections '87 was used in determining Calistoga's housing needs.

Existing and Projected Housing Needs

In January 1989, the Association of Bay Area Governments (ABAG) published its assessment of Regional Housing Needs. The existing need for housing in Calistoga is 28 units. Six factors are assumed in ABAG's estimate of existing and projected need:

- Market Demand for Housing
- Employment Opportunities
- Availability of Suitable Sites and Public Facilities
- Commuting Patterns
- Type and Tenure of Housing
- Housing Needs of Farmworkers

The calculation of existing housing need is the difference between the number of units actually available in the jurisdiction and the number that should have been available based

on an optimal vacancy rate. The "optimal" rate assumed by ABAG is 4.5%. This rate is a goal for the Bay Area Region.

Calistoga's housing needs were originally estimated at 493 units. ABAG's calculations were based on the assumption that infrastructure constraints to growth would be resolved by 1990 which has not occurred. Upon receipt of ABAG's September 1988 Housing Needs Determinations (which were based on Projections '87), the City analyzed water and sewer infrastructure constraints. It was shown that future annual water allocations limit construction of housing to 54 units per year until 1995 (memo, Richard Spitler, Planning Director, to City Council, November 30, 1988). Based on this analysis, estimates of housing need were lowered to 310 units. In their revised January 1989 Housing Needs Determination, ABAG accepted this reduced figure.

Table S provides a break down of the projected need by time frames. The 1988-90 projected need is 29 units. The 1990-95 projected need equals 281.

As discussed previously new construction in the City included nine single family detached units and one 4-plex structure. Of these units none are considered affordable. The number of units that must be provided in each income category is listed on Table T. As indicated, the majority of units must be provided for very low income households and above moderate income households, 99 and 93 units respectively.

Governmental Constraints

Governmental constraints refer to any ordinances and policies that are excessively restrictive and that constrain the maintenance, improvement or development of housing. Each City ordinance or plan related to housing is analyzed below for constraints.

Calistoga General Plan

Several General Plan Elements directly or indirectly regulate housing maintenance and/or development. The Land Use Element establishes residential designations and densities as follows:

- Rural Residential (0 - 1 d.u./net acre)
- Lowest Density Urban Residential (0 - 5 d.u.'s/net acre)
- Medium Density Urban Residential Range (5 - 12 d.u.'s/net acre)
- Highest Density Urban Residential Range (5 - 20 d.u.'s/net acre)

TABLE S
EXISTING AND PROJECTED HOUSING NEEDS
CITY OF CALISTOGA

Time Frame	Need
Existing Need	28
1988-90 Projected Need	29
1990-95 Projected Need	281
TOTAL PROJECTED NEED	310

Source: ABAG, Housing Projections, January 1989

TABLE T
PROJECTED HOUSING NEED BY INCOME CATEGORY

Category	Number of Units
Very Low	99
Low	56
Moderate	62
Above Moderate	93

Source: ABAG, Housing Projections, January 1989

Currently, a substantial amount of land is designated for Rural Residential uses. Little land is zoned for higher density uses. The emphasis on larger parcels presents a constraint to the development of affordable housing which tends to be built at higher densities.

Several Land Use policies influence residential development within the City through design requirements and relationship to public service provisions. Design requirements include, but are not limited to, consideration of designs harmonious with the hillside environment. Public services provisions include prohibition of subdivision development unless there will not be an overcrowding of students on any educational level as well as other public service requirements. These policies are not excessively restrictive to the development of housing.

Conservation Element policies include requiring dedication of land for parks or the payment of in lieu fees, and adequate yards and setbacks. Parkland dedication and development standards are discussed in the Fees and Exactions and Subdivision Code analysis.

Housing Element goals and policies promote the maintenance and development of housing. Some policies have not been implemented such as an annual update of the housing condition inventory. Housing condition surveys have been updated every few years. Many housing programs have not been utilized. Housing program implementation is described in further sections.

Calistoga Zoning Code

The Zoning Code provides regulations regarding uses, densities, lot standards, heights, setbacks, parking, signage, and other issues. Several residential designations are described on Table U. Multi-family units, which tend to be more affordable than single-family units, are permitted in three zones. As a percentage of zoned acres, higher density designations (e.g. R-2 and R-3) make up only 1.4% of the total vacant parcels within the City. The little amount of land designated for higher densities in conjunction with infrastructure limitations have functioned as a constraint to housing development during the last several years. This is discussed further within the Vacant Land Survey section.

Zoning densities do not appear to restrict affordable housing development. Maximum density for the R-2 and R-3 zones is one dwelling unit per 1,000 square feet of land area. In addition, the Planned Development district allows some flexibility in whether higher or lower development standards will be required for the combining district. Densities may increase in some cases, but not more than 10% over the density permitted in the combining district.

TABLE U
RESIDENTIAL DENSITY DESIGNATIONS

Current Zone District	Resid. Uses Permitted	Minimum Building Site Area	Maximum Coverage	Building Height(1)	Front	Setbacks Side	Rear	Resident Parking	Zoning Density	Current General Plan Designation	Density
A-E	One-family dwelling per legal lot	5 acres (min. lot size)	5%	35'	100 ft.	50 ft.	100 ft.	2 spaces/d.u.	1 single family/ legal lot	RR	(0-1 d.u./ acre)
R-R	One-family dwelling	1 acre	40%	40' max	20 ft.	15 ft.	20 ft.	2 spaces/d.u.	same as General Plan	RR acre)	(0-1 d.u./ acre)
R-1	One-family	6,000 s.f. 7,000 s.f. on corner lots	40%	35'	20 ft.	(3)	20 ft.	2 spaces/d.u.	same as General Plan	LD Low	0-5 d.u./ acre)
R-2	One-family duplexes Multi-family	same as above (lot size increases as density increases)(4)	60%	70'	20 ft	(3)	15 ft.	2 spaces/d.u.	same as General Plan	MD Medium	(5-12 d.u./ acre)
MD: MHP	Mobile Homes	2,800 s.f./space	60%	N/A	10 ft. avg.			Mobile Home Park 1.5 times the # of homes	8 d.u./acre	MD Medium	(5-12 d.u./ acre)
R-3	single family multi-family	6,000 s.f. (7,000 on corner lot)(4)	75%	No Std.	15 ft.	5 ft.	(5)	2 space/ d.u.	same as General Plan	HD High	(5-20 d.u./ acre)

TABLE U

RESIDENTIAL DENSITY DESIGNATIONS

Current Zone District	Resid. Uses Permitted	Minimum Building Site Area	Maximum Coverage	Building Height(1)	Setbacks			Resident Parking	Zoning Density	Current General Plan Designation	Density
					Front	Side	Rear				
PD	multi-family	N/A(2)	N/A(2)	N/A(2)	N/A(2)	N/A(2)	N/A(2)	N/A(2)	Flexible	PD	Flexible

Source: City of Calistoga Zoning Code

- Notes:
- (1) General Zoning Code Provisions include a maximum permissible height of 30 feet.
 - (2) Depends on the base district.
 - (3) Setback requirement: $\frac{1}{4}$ the height of the building.
 - (4) No more than one dwelling unit/one thousand square feet of land area.
 - (5) 5ft./1 story, 10ft./2 story, 15ft./2+ stories.

Parking requirements generally allow for 2 spaces/dwelling unit. Parking requirements can function as a constraint to housing development since land devoted to off-street parking can reduce the area available to construct dwellings. The City of Calistoga does not have access to a public transportation system. Only taxi service and Greyhound bus service exists. In addition, inadequate bicycle and pedestrian facilities have been noted in the Transportation/Circulation Section of the MEA. Until adequate transportation and circulation facilities are developed, parking requirements will likely remain the same. Programs to mitigate this problem have been included in the General Plan Update Volume II: Policy and Program Document. Please refer to the Land Use and Circulation Elements.

Height limits would allow for approximately 5-6 stories maximum in the R-2 district. No standard is given in the R-3 district. Maximum lot coverage regulations coupled with the height restrictions limit the design and densities of a given project. In order to increase project design flexibility, the Zoning code includes a Planned Development designation.

The City's Zoning Code complies with state laws requiring protective zoning for mobile homes (Chapter 17.19, Calistoga Zoning Code). The Zoning Code should be amended to allow manufactured housing in single-family zones and mobile home parks in land planned for residential uses. The code does comply with laws requiring provisions for second units (Chapter 17.37, Calistoga Zoning Code). Mobile homes and second units or "granny flats" provide more affordable housing especially for senior citizens.

The Zoning Code will be amended to be consistent with the adopted General Plan. Descriptions of General Plan Land Use designations indicate the development standards and densities for each area. The Zoning Code will reflect these standards.

Calistoga Subdivision Code

The Subdivision Code of the City of Calistoga provides regulations pertaining to properties divided for the purpose of sale, lease or financing whether immediate or future. Included are standards relating to design, improvements, dedications, tentative maps, final maps, soil reports and other issues. Setbacks, street width, and other requirements may reduce the area available for site development. Street width standards are shown on Exhibits 11 through 14 in the MEA Traffic/Circulation section. The local street width standards, including two travel lanes and two parking lanes, equals 36 feet. With sidewalks and easements, total right-of-way width equals 56 feet. Curbing requirements are general: "concrete curbs and gutters shall be required and sidewalks may be required along all streets and highways" (Section 16.12.010.(D) Subdivision Code).

Open space requirements are vague as seen on Table V. The General Plan provides for 5 acres of parks per 1,000 population. Please refer to the Open Space Element.

Allowing for easements instead of rights-of-way would increase the total area considered for site development. Relaxing other standards such as allowing rolled curbs or curbless sidewalks would decrease development costs.

Development projects are required to comply with all applicable standards and procedures. Exceptions to some regulations may be allowed if the following facts are found:

1. That there are special circumstances or conditions affecting said property;
2. That the exception is necessary for the preservation and enjoyment of a substantial property right of the petitioner;
3. That the granting of the exception will not be detrimental to the public welfare or injurious to other property in the territory in which said property is situated.

A program intended to increase development standard flexibility is provided in General Plan Update, Volume II: Policy and Program Document.

Since 1964, there have been no substantial changes in the Subdivision Code. This slows the permit process. In order to meet state standards, the Code should be updated.

Building Code

The City of Calistoga has adopted the Uniform Housing Code, 1985 Edition, with some modifications. In addition the City has adopted the 1985 Dangerous Building Code, the 1985 Plumbing Code, the 1985 Uniform Mechanical Code, and the 1984 National Electric Code. On January 1, 1990, the City will adopt the 1988 Uniform Building Code.

In general, buildings are inspected when a permit is issued or when a complaint is filed. If violations are found, a letter is sent to the building owner. Depending on the degree and type of violation, a time period is specified when a notified owner must comply.

While building codes provide minimum health and safety standards through regulation of building construction, increasing regulations that accompany each successive code may place a burden on the construction of affordable housing. The City through other ordinances and programs has tried to lessen burdens on developers of affordable housing by reducing some fees, for example, infrastructure fees of the Resource Management System.

Resource Management System

The City adopted a Resource Management System (RMS) in 1984 and has periodically amended it, most recently in June 1987. Currently an amendment is under consideration by the City. The RMS has served as a method to control residential, commercial and industrial growth in order to respond to the water and wastewater facility shortages. It establishes a schedule of water consumption for proposed developments. Specific regulations are provided in the Land Use section of the MEA.

Assuming current water consumption rates and sewage treatment capacity problems, 54 dwelling units a year can be constructed accommodating approximately 115 persons using current household size figures. On July 10, 1990, the City extended a water and sewer permit moratorium (Ordinance 442) until certain deficiencies in water provision and sewage treatment can be corrected. The ordinance will remain in effect until January 11, 1991.

The City Council may grant an exception to the water and sewer permit moratorium under the following conditions:

1. The proposal meets the City's mandated guidelines for affordable housing and is endorsed by the Napa Valley Housing Authority;
2. The project funds City sewer treatment expansion in excess of its needs;
3. The project provides the City with an acceptable fresh water source in excess of its needs; and
4. The project is subject to the provisions of the City's Resources Management System, particularly its growth management aspects.

The moratorium should not affect affordable housing development. It may have a short-term effect on the production of market-rate housing.

As of September 1990, the City has completed the following steps in order to respond to water and sewer capacity problems:

- The City Council has accepted bids and authorized construction to proceed on the Kimball Water Treatment Plant Improvements, and has requested a proposal from the contractor to construct the Clarifier additional to the project concurrent with the other improvements; and
- The City Council has authorized its engineers to proceed with design improvement work for six of the priority items required in the May 1988 Sewer Treatment Plan Improvement Plan; and

- The City Council has authorized staff to proceed on preparing cost estimates to correct a number of deficiencies in the City's water and sewer infrastructure systems.

At 54 units per year for five years, the City cannot meet its housing objectives as determined by ABAG. The City would be 40 units short of meeting its total objective, but may be able to meet the very low to moderate housing objectives. Policies and programs regarding water conservation and water source development are provided in the General Plan Update Volume II: Policy and Program Document (refer to the Circulation and Conservation Elements).

The current RMS provides allowances for low-moderate and senior housing project bonuses through three methods. One, a twenty-five percent density bonus may be granted along with waiver of the one-time water connection fees, water treatment fees or building permit fees. All other fees are to be paid in full. Two, a reduction of twenty-five percent of one-time water treatment development and building permit fees may be granted. Three, mother-in-law or second unit conversions/constructions may pay reduced water development service connection fees (50% reduction) and no sewer development fees.

The proposed RMS amendment will provide the following fee reductions for affordable housing: the City may grant a twenty-five (25%) reduction in the water and sewer development fees; and, granny unit or second unit conversions/constructions may receive a fifty (50) percent reduction in water development service connection fees and sewer development fees. Provisions for density bonus increases have been omitted.

While the current Housing Element policies support the provision of density bonuses and other incentives, percentages are not specified in any of the City's codes. California Government Code Section 65915 et. seq. require localities to institute density bonus provisions for developers who provide low or moderate income housing; or, the City may provide other incentives of equivalent financial value.

Fees and Exactions

Since the passage of Proposition 13 1978, it has been difficult to raise revenues through taxation. Several agencies now require the payment of fees or land dedication to offset the cost of providing planning services and public services for new development. Table V summarizes the City's planning, subdivision, and building permit fees and exactions as well as school impact fees. Development related fees can function as a constraint on residential development. The City through the Resource Management System, for example, has tried to lessen the impact of certain infrastructure fees on affordable housing units.

TABLE V

FEES

Application/Service/ Requirement	Fee/Dedication
School Impact Fee	
- residential	\$1.53/s.f. of habitable area
- commercial/industrial	.25/s.f.
Building Department valuation of \$53,900 (1)	
- building permit	\$295.00
- plan check	221.25
- plumbing permit	57.00
- mechanical permit	22.00
- grading permit	34.50
- sewer connection fee	1,575.00/per unit
- sewer delivery fee	1,212.00/per person
- water connection fee	3,269.00/per unit
- 2% public safety fee	1,078.00
Planning Department	
- Use Permit (non-profits: \$125)	\$375.00
- Use Permit Extension	125.00
- Use Permit Amendment	125.00
- Variance	187.50
- Exception	187.50
- Rezone	
(Suspended per Council action 6/21/88)	500.00
- Zoning Ordinance Amendment	500.00

Note:

(1) Assumes 1400 square foot, 3 bedroom/2 bath unit with no garage.

TABLE V (Cont.)

FEES

Application/Service/Requirement	Fee/Dedication
- General Plan Amendment (Suspended per Council action 6/21/88)	750.00
- Planned Unit Development	375.00
- Lot Line Adjustment	62.50
- Parcel Merger	62.50
- Reversion to Acreage	125.00
- Parcel Map	250.00
- Tentative Final Map	125.00 + 12.50/lot
- Final Map	125.00 + 12.50/lot
- Parcel Map Waiver	125.00
- Amendment/Correction to Map	125.00
- Initial Study	125.00
- Environmental Impact Report	1,677.50
- Administrative Appeal	50.00
- Planning Commission Appeal	150.00
- Time-line Reconsideration	550.00
- RMS Waiver of Consideration	350.00
Subdivision Code	
Tentative Tract Map Filing Fee	\$ 25.00
City Engineer Services and Expenses	\$ 50.00
Checking Fee	\$ 1.00/lot 15.00 minimum

TABLE V (Cont.)

FEES

Application/Service/ Requirement	Fee/Dedication
Storm Drainage	The subdivider shall, subject to riparian rights, dedicate a r-o-w for storm drainage conforming substantially with the centerline or natural water course or channel, stream or creek that transverses the subdivision . . .
Park and Public Areas	<p>The Planning Commission may require adequate provision for suitable areas for parks, playgrounds, schools, and other public buildings.</p> <p>An offer of dedication shall be made to the City or other appropriate governing bodies of all parcels of land intended and/or designated to be used for public purposes.</p>

Source: City of Calistoga

The General Plan Conservation Element and the Subdivision Code include policies and provisions towards the adequate provision of land for parks, schools, other public buildings, and drainage. No specific formulas for the calculation of required acreages is provided.

The most significant fee related to the production of affordable housing is the City's recent Inclusionary Housing Program adopted in June 1989. In response to the recognition that little or no new affordable housing has been built in the City, the City Council directed Planning Staff to prepare an Inclusionary Housing Program. All new residential projects of five or more units are required to address affordable housing in one of the following ways:

- 10% of the units for rent shall have rents affordable to very low and low income households (i.e. income levels that do not exceed 80% of the median income); 10% of ownership units shall be affordable to households with incomes below 120% of the County median income, or;
- A portion of the land of any new residential project shall be dedicated to the City for use as a site for affordable housing, or;
- An in-lieu fee, related to the cost of providing affordable housing, shall be offered to the City, or;
- Reasonable alternative methods - The City will entertain from housing developers offers of alternative measures to provide affordable housing in their projects.

The in-lieu housing fee is established at \$18,350 for each required affordable housing unit in any given project. The fee is the difference between the total construction cost to build the unit and the estimated affordable housing purchase price. Fees acquired through this program will be placed in a separate Housing Trust fund to be used exclusively for affordable housing development.

The program allows the developer to meet the affordable housing objectives in the community in many ways. Examples include:

- construction of affordable housing units in the project.
- construction of affordable housing units outside the project (i.e., developers could donate time, material and labor to construct units on other affordable housing sites).

- donation of units to the City (i.e. the Developer could donate a certain number of units to the housing authority who, in turn could either rent or sell the units to qualified families.
- provide in-lieu fees to the City.

This program in conjunction with other incentives to providing affordable housing will help increase the affordable housing stock in the City.

Recently, the Napa Valley Ecumenical Housing and Napa Valley Family Homes organizations have optioned a 4.54 acre site in Calistoga. Thirty-six to forty-six units will be proposed (phone interview, Bob McCue, Director, Napa Valley Ecumenical Housing, September 4, 1990). No formal application has been submitted. The Inclusionary Housing Program as well as other programs in the General Plan Update Volume II: Policy and Program document could be used to help fund this and other affordable developments.

Processing and Permit Procedures

The various permits that a housing developer may be required to obtain are listed on Table V. The usual processing applications that are associated with residential development are listed below:

- | | |
|---------------------------|--------------------------|
| ● General Plan Amendment | ● Variance |
| ● Specific Plan | ● Zone Change |
| ● Environmental Documents | ● Parcel Merger |
| ● Tract Maps | ● Lot Line Adjustment |
| ● Parcel Map | ● Conditional Use Permit |

Most residential developments require only a few applications from the above list. Currently, a planning application moratorium is in effect (Ordinance 449) due to infrastructure constraints.

The moratorium on planning applications remains in effect until October 4, 1990. Exceptions to the prohibition include:

1. Those land use permits currently filed with the Planning Department.
2. Previously approved Tentative Subdivisions can be finalized.
3. Housing projects which offer at least fifty one percent of the units for affordable housing (HUD definition as applied to the City of Calistoga).

4. Public projects.

Should an extension of the Ordinance occur, market rate and some affordable housing projects may be delayed.

Programs intended to remove infrastructure constraints are contained in the Land Use and Circulation Elements of the Policy and Program Document, General Plan Update, Volume III.

Lengthy process times associated with permits, reviews, and hearings, may cause some developers (especially those with small projects) to avoid a city or county that has a reputation of long processing periods. Typical processing time in Calistoga is approximately three months for projects not requiring EIRs and three months and more for more complex projects requiring EIRs. These processing times are not excessive.

With regard to hearings, the Planning Commission is the body of approval for conditional use permits and tentative tract maps. Unless there is an appeal, the City Council will only review final tract maps. For a complex project, three to four meetings may be required.

Policies Toward the Utilization of Federal and State Community Development Programs

In the 1985 Housing Element, several Federal and State housing development programs are discussed. Programs which were to be pursued include:

- Urban Development Action Grant (UDAG) and Commercial Development Program
- HUD Sections 8, Lower Income Rental Assistance
- Small Cities Community Development Block Grant (State HCD)
- FmHA Rehabilitation Loans and Grants (FmHA 504)
- Homeownership Loans (FmHA 502) and Technical Assistance for Self-Help Housing (FmHA 523)
- Farmworker Housing Grant (State HCD)
- Deferred Payment Rehabilitation Loan Fund Program (State HCD-AB333)
- New Construction for the Elderly (HUD Section 202)

Of these programs, only four have been utilized: HUD Section 8, Community Block Grant, Rehabilitation Loans and Grants, and the Deferred Payment Rehabilitation Loan Fund Program (phone interview, Pat Rusch, November 30, 1989).

Currently, 26 households in Calistoga participate in the Section 8 program which is administered by the Napa Valley Housing Authority (phone interview, Marjorie Farr, November 30, 1989). Participation in the Community Development Block Grant Program has been described in the Housing Stock Condition section. Approximately 112 units have been rehabilitated with these funds. Participation in the Rehabilitation Loans and Grants has been low with only one resident applying. Approximately six Calistoga residents including three senior citizens participate in the Deferred Payment Rehabilitation Loan.

NonGovernmental Constraints

Non-governmental constraints to housing maintenance, improvement or development include the cost of land, the cost of construction, and the availability of financing. Studies of these components indicate that while construction costs as a portion of housing development costs have decreased over the long term, land development costs have increased. Over the long term, the percentage of cost accounted for by financing has increased, though this trend has fluctuated over the short-term as interest rates go up and down (Statewide Housing Plan, 1988). Each of these issues are described below.

Cost of Land

Currently within the City, a vacant property designated for residential uses is valued at \$55,000. This lot is slightly smaller than the usual 7,200 s.f. lots in the City's developed area. The lot's price may be slightly depressed due to infrastructure constraints (phone interview, Robert Beck, November 21, 1989). Half-acre lots towards the outside of the City have estimated values of approximately \$75,000 each. One-acre lots at the edge of the City limits have estimated values of approximately \$90,000. Land values have been provided by Beck and Taylor, Napa Valley Realty.

Cost of Construction

The cost of single-family home construction has risen from \$41.65 per square foot in 1980 to \$56.37 per square foot in 1988 (1989 National Construction Estimator). These costs include builders overhead and profit and a 450 s.f. garage (but no basement). The costs assume construction of a good quality home in a suburban area under competitive conditions. Since the above figures are national averages, they are not entirely representative of local conditions. Construction costs are higher in some localities than in others.

Area modifications have been developed to account for differences in local conditions. The Santa Rosa modification (1.17) provides the most applicable estimate for Calistoga. Total construction cost should be multiplied by this factor to obtain full building costs. For example, the total construction cost of a 1,500 square foot home would equal \$84,555. Multiplied by the area modification results in a full construction cost of approximately \$98,929.

Availability of Financing

The availability of financing is excellent (phone interview, Robert Beck, November 21, 1989). Many savings and loans as well as banks have branches located in the Cities of Napa and Santa Rosa. In a survey of 34 banks and savings and loans, interest rates ranged from 9.5% to 10.25% for a 30 year fixed rate mortgage. For an adjustable mortgage, initial rates ranged from 7.45% to 9.95% (Napa Valley Land Title Co. November 16, 1987).

Added to these rates often are the points that lenders charge for the loan as well as preparation fees. These are added on top of the interest rate and are usually paid up front. Points range from .75 to 2 for a 30 year loan term.

While the availability of financing is important, it is more essential to determine the effect of interest rates on housing affordability. Table W presents payment factors, annual payments, payments over mortgage terms, and income necessary to afford a home priced at \$155,000 to \$165,000 (as estimated earlier by St. Helena Realty). A household would have to earn \$44,500 annually in order to afford a home priced at \$155,000 with a 80% mortgage of \$124,000, and an interest rate of 9.5%. For higher interest rates, income needed rises.

The estimated annual incomes are substantially higher than most income estimates as presented in Table M. A family of four earning a moderate income may be able to afford current home prices. Very low and lower income households may be priced out of the housing market.

VACANT LAND SURVEY

Table X presents a 1989 estimate of vacant and underdeveloped land suitable for residential development. Regardless of designation all vacant and underdeveloped properties deemed suitable for residential development were assessed. General Plan and Zoning categories are consistent and have the same densities. Zoning categories are presented on Table X.

Results indicate that at full buildout 1,322 units could be provided. It is unlikely that all parcels will be developed with residential uses because of current and future land use

TABLE W
HOUSING AFFORDABILITY

	Term	Interest Rate		
		9.5%	10%	10.25%
Mortgage Payment Factor	15	.1277	.1315	.1334
	30	.1017	.1061	.1083
Annual Payment for \$124,000 Mortgage	15	\$15,840	\$16,303	\$16,536
	30	\$12,608	\$13,154	\$13,429
Annual Payment for \$132,000 Mortgage	15	\$16,862	\$17,355	\$17,603
	30	\$13,422	\$14,002	\$14,295
Payments over Mortgage Term \$124,000	15	\$237,603	\$244,541	\$248,041
	30	\$378,252	\$394,615	\$402,868
Payments over Mortgage Term, \$132,000	15	\$252,933	\$260,318	\$264,044
	30	\$402,655	\$420,074	\$428,859
Annual Household Income Necessary to Obtain \$124,000 Mortgage (Assumes 34% PITI/Gross Income Ratio)	15	\$55,907	\$57,539	\$58,363
	30	\$44,500	\$46,425	\$47,396
Annual Household Income Necessary to Obtain \$132,000 Mortgage (Assumes 34% PITI/Gross Income Ratio)	15	\$59,514	\$61,251	\$62,128
	30	\$47,371	\$49,420	\$50,454

Source: STA Planning, Inc.

TABLE X

**VACANT AND UNDERDEVELOPED LAND INVENTORY SUITABLE
FOR RESIDENTIAL DEVELOPMENT**

# of Parcels	# of Housing Units	Acreage (net)	% of Total	Zone
86	376	531	77.3	RR
116	400	81	11.8	R-1
36	130	9.6	1.4	R-2 & R-3
37	130	28	4	T
19	242	23.4	3	PD
21	44	5	.73	C & HC
Total 258	1,322	678	100.0	

Source: City of Calistoga

Assumptions:

1. Allowable densities:
 RR - 1 unit per 40,000
 LDR - 1 unit per 8,000
 MDR - 1 unit per 3,333
 T - 1 unit per 2,000
 HDR - 1 unit per 2,000
2. Twenty percent of the total acreage was subtracted for street/park dedications for acreage parcels, except where noted below.
3. For parcels with a MDR or HDR land use designation and R-1 zoning, lot size was deemed to be 6,000 sq. ft.
4. In an in-fill neighborhood with R-3 or CC zoning, only vacant lots were counted or underutilized large parcels.
5. RR-RH and T were calculated at 50% of allowable density
6. Floodway lots were deleted.

policies and the availability of infrastructure. Housing development will most likely be restricted to a maximum of 54 units per year until 1995 due to water and sewer capacity constraints (Memo, Richard Spitler, Planning Director, to Planning Commission, November 24, 1988).

Overall, there is sufficient land available to provide housing well beyond the current and projected need. No additional annexations beyond the City's Sphere of Influence would be necessary.

As indicated on Table X, only 1.4% of vacant land is currently designated with higher residential densities (R-2 and R-3). Higher densities may also be allowed in the Planned Development District.

Some historic single-family areas are currently zoned with higher residential densities. These historic lower density neighborhoods contribute to the City's economy by attracting film-makers who use the homes in their film productions. Higher density developments disrupt the character of the neighborhood.

Due to desires for protection of historic residential areas, higher density designations will change to medium density designations near Cedar Street according to the General Plan Update Volume II: Policy and Program Document. The Zoning Code will be updated to correspond with the General Plan Update Land Use Plan. Other areas of the City have been designated in the General Plan Update with higher densities than currently allowed in the 1977 General Plan and the current Zoning Code. According to the General Plan Update Volume III: EIR, Calistoga should be able to meet its housing objectives should active implementation of housing programs occur.

In the last year, 1988-1989, nine single family homes in the R-1 zoning category were built. One four-plex structure was constructed on property zoned R-3. Typically, more units are built at lower densities. This trend will probably continue.

Since affordable units tend to be built at higher densities, most units would be built in the R-2 and R-3 zones. The amount of land currently available (with/adequate public services and facilities) in these zones would only allow for the development of 130 dwelling units. This would not meet the City's total regional share or the quantified objectives for low and moderate-income units. This assumes that the zones will remain as currently adopted.

If a 25 percent increase in density were approved for R-2 and R-3 designated lands, then there would be an increase in potential housing units as follows:

<u>Designation</u>	<u>Current Number of Potential Housing Units</u>	<u>Density Bonus Increase</u>
R-2 and	130	32

This would contribute to, but not result in the attainment housing objectives.

In order to maintain consistency with the General Plan, the Zoning Code will be revised. The densities and intensities will correspond with those listed on Table A of the Policy and Program document (General Plan Update: Volume II). Table B in the General Plan Update Volume III: EIR indicates that over the planning period of the General Plan (twenty years) a total of 1,678 housing units could be accommodated (this does not assume density bonus increases). Approximately half of these units will be built in the Medium Density Residential and High Density Residential categories.

Should active implementation of infrastructure and housing policies occur over the next five years as recommended in the Policy and Program document, the City would be able to meet and surpass its five-year housing objectives as determined by ABAG. The City would also be able to replace units recently demolished in the past few years.

ASSISTED RENTAL HOUSING AT RISK FOR CONVERSION

By January 1, 1992, all jurisdictions must incorporate discussions of assisted rental housing units at risk for conversion to non-low-income housing uses during the next ten years (SB 1282; Chapter 1451). Assisted housing developments include multi-family rental housing assisted under the following programs:

- Federal Section 8 (new construction, substantial rehabilitation, and loan management setasides)
- Federal Section 213
- Federal Section 221 (d)(3) Below-Market-Interest-Rate Program
- Federal Section 236
- Federal Section 202
- Federal Section 101 rent supplement assistance
- Federal Community Development Block Grant Program

- Federal (Farmers Home Administration) Section 515
- State and local multi-family revenue bond programs
- Local redevelopment programs
- Local in-lieu fee programs
- Units developed pursuant to local inclusionary housing programs
- Units developed to qualify for a local density bonus

Of the above programs, the City only utilizes local programs. Although the City identified Section 202 (New Construction for the Elderly) as a program in their Housing Element, the program has not been implemented. The Napa Valley Housing Authority reports that no subsidized housing complexes are located within the City of Calistoga (phone interview, Marjorie Farr, Napa Valley Housing Authority, December 8, 1989).

The Section 8 program in the City consists of Lower Income Rental Assistance which subsidizes lower income renters who may then live in market-rate units. The subsidy is with the renter and not with the unit itself. These units would not be in danger of conversion.

The City has received Small Cities Community Development Block Grant funds from the State Office of Housing and Community Development which administers the federal CDBG funds. Federal CDBG assistance funds must be addressed according to the recent legislation. The State Office of Housing and Community Development Department also anticipates legislative updates which would require additional analysis of State and locally-financed projects and projects assisted by the Federal Farmers Home Administration.

As described previously, under the State Small Cities CDBG program, property owners must agree to rent to low and moderate income households for the term of the rehabilitation loan which is usually 15 years. There are 72 rental units which have been rehabilitated under this program. The average loan period is 21 years. Appendix C of the MEA contains a list of Assisted Rental Housing Units at risk for conversion to non-low income units. Two assisted rental units may have been potentially lost since their loan terms have recently expired. If feasible, the City should contact property owners to monitor rent levels to ascertain any decreases in affordability.

According to the City's Inclusionary Housing Program, the cost-estimate to produce a new modest single-family housing unit is \$137,000.00. The cost estimate to preserve the two CDBG units with loan terms expiring within the next ten years as affordable would be

lower than replacement since the loan amounts are small and the loan terms are nearly expired. The amount required to preserve these units as affordable is analyzed in Appendix C.

Through its Inclusionary Housing Program, the City may be able to acquire or preserve the two units which may be converted between 1990 and 2000. The City has identified a program to use CDBG repayment funds towards affordable housing. Another program includes the formulation of a Redevelopment Plan for the lower Washington area. In addition, there are a couple of non-profit affordable housing developers, including HAND located in the City of Napa and Ecumenical Housing in the City of St. Helena, who may be able to acquire and manage the qualifying housing developments.

No units have yet been developed under the City's density bonus provisions or under the recent Inclusionary Housing Program. Currently, the Inclusionary Housing Program includes resale controls. As units are developed, locations, numbers of units, and loan term expiration records should be maintained to monitor any conversions.

ENERGY CONSERVATION

Energy conservation can lower living expenses and maximize energy efficiency. Some older existing residences have poor thermal capacity. Table R indicates that 64 out of 210 respondents (31%) felt there were problems with insulation in their unit.

State and federal tax incentive programs and assistance programs offered by local power oriented companies provide several methods of energy conservation, including insulation, weatherization, and solar systems. Calistoga's Building Department complies with state building codes and other mandated legislation relating to energy conservation standards for new residential and non-residential buildings.

A non-profit corporation Housing Association for Napa Development (HAND) operates a county-wide Weatherization and Energy Conservation program out of the City of Napa. The program has been underutilized by Calistoga residents due to distance and language barriers in some cases. Those who utilize the program are required to attend an Energy Conservation Workshop sponsored by PG & E. The workshop is held only in English. This is not a strict requirement for those who do not speak or understand much English.

HAND also serves the County's senior citizens who qualify. In some cases, rails and wheelchair ramps will be installed. In addition, roofs and screen doors may be repaired (phone interview, Soledad Ramirez, November 30, 1989).

The City complies with state legislation for solar easements. Although Calistoga has no ordinances or building code requirements that formally touch on energy conservation, the

City does reserve the right through the permit process to review design and orientation techniques that favor energy efficient site planning.

EQUAL HOUSING OPPORTUNITY

No formal discrimination complaints in Calistoga have been filed in the last several years. Phone inquiries, largely from Hispanic families, have occurred. Common complaints are that there are not enough units available for their family size. Investigations into complaints have shown that there is a fear by land owners that there will be a larger number of people living there than originally rented to (phone interview, Maria Rodriguez-Welch, Napa County Rental Information and Mediation Department, December 11, 1989). Inquiries or reports of housing discrimination are normally referred to Napa County Rental Information and Mediation Department.

PUBLIC PARTICIPATION

In Fall of 1987, a resident's survey was conducted by students of California State Polytechnic University, San Luis Obispo in preparation for the General Plan Update. A random survey of Calistoga residents were asked what type of dwellings the residents would like to see. The greatest response was in favor of single family structures and low to moderate income housing. The housing types that residents would like to see less of include mobile homes, duplexes, and condominiums. Further public participation is planned with the circulation of all General Plan Update documents including the MEA.

HOUSING ELEMENT EVALUATION

Review of Goals, Objectives, Policies, and Programs

Review of the current Housing Element is important in assessing the effectiveness of goals, objectives, policies, and programs. This review partially provides a framework on which to develop new policies and programs. Table Y indicates the various policies and objectives and the status of implementation.

Regarding previous housing need projections from 1983 to 1987, the City's share was as follows:

very low income	47 units
lower income	18 units
moderate income	15 units
above moderate income	<u>20 units</u>
TOTAL	100 units

TABLE Y
HOUSING ELEMENT EVALUATION

Program	Objective (# of units)	Status
<u>Rehabilitation</u>		
CDBG	170	112 rehabilitated
FmHA 504	24	1 application
AB333	yes	6 participants
Weatherization	42	Participation in HAND is low; not a large effort to educate citizens on energy conservation; participation in HAND is low due to distance and language barriers.
Special Circumstances Grant	37	Very few participants in Napa County in general (phone interview, Lynn Perez, County Welfare Department, December 6, 1989).
<u>Conservation</u>		
Section 8	30	26 participants
CDBG	85	See above under Rehabilitation
<u>Minimal New Construction</u>		
FmHA 502, 523 + Farmworker Housing Grant	15	No units constructed. Lack of financing, city-owned land, and available city staff.

TABLE Y (Cont.)
HOUSING ELEMENT EVALUATION

Program	Objective (# of units)	Status
HUD 202	40	No units constructed. Lack of financing, city-owned land, and available city staff.
Growth Management Plan and City Incentives	25	No units constructed. Lack of financing, city-owned land, and available city staff.
Conventional Market	20	209 (1) units
<u>Other</u>		
Redevelopment Agency Formation	N/A	In 1981, Calistoga's City Council adopted an ordinance establishing a Community Development Commission (CDC) with itself as the CDC Commissioner. Although several areas were analyzed as potential redevelopment districts, a plan was not formulated.
Adopt Historic Building Code	N/A	Not adopted.
Granny Flat/ Second Unit Law	N/A	Adopted.

TABLE Y (Cont.)
HOUSING ELEMENT EVALUATION

Program	Objective (# of units)	Status
Promotion of Equal Housing Opportunity	N/A	No formal complaints have been filed. Several inquiries have been made to the Napa County Rental Information and Mediation Department. Concerns include the lack of units available for larger families.
Sources:	City of Calistoga, Planning and Housing Departments 1983 Calistoga Housing Element	

Note: (1) Units constructed from July 1982 to April 1989

Though 25% of Calistoga's growth was to be set aside for low-moderate income housing, little or no new affordable housing has been built in the City (memo, Richard Spitler, Planning and Public Works Director, to City Council, June 2, 1989). In addition, pursuance of many Federal, and State programs and the institution of local programs has not occurred.

The following chart indicates how the Housing Element Update incorporates what was learned from the results of the 1985 Housing Element.

<u>Housing Impediments</u>	<u>Proposed Program</u>
Participation in HAND is low due to distance and language barriers	EI1, FI3, FI4
Lack of financing, city-owned land, and available City staff.	AI3, AI5, AI7, AI9, AI10, AI11, AI12, AI13, BI2, BI3, BI4, BI5, BI6, BI9, CI1, CI3, DI4, DI5
Redevelopment plan not developed.	CI2
Historic Building Code not adopted.	Refer to Conservation and Safety Elements

Programs are listed in Volume II: Policy and Program Document.

FINDINGS

1. Calistoga provides only a fraction of the County's housing, 7%.
2. Growth by decade in residential units increased by 6% in 1970 and 77% in 1980. Since 1980, growth was significantly slowed at 5.6%. Restrictions on water and sewer hook-ups continue to restrict housing growth.
3. Household size has generally decreased over the last 29 years to a present level of 2.13.
4. In 1980, 7% of the residents reported more than 1.01 person per room, the standard for determining overcrowded conditions.

5. A small percentage of residents (2.3%), have work disabilities or public transportation disabilities.
6. The elderly make up a major percentage of Calistoga's population. With increasing age many require convalescent care. The shortage of facilities forces some elderly to move to other localities.
7. 29% of 485 persons earning below the 1979 poverty level were aged 60 years and older.
8. Household size and family size has decreased in general for the Calistoga population. Household and family sizes are larger for Hispanic residents who tend to live in overcrowded conditions. There is a lack of larger rental units for larger families.
9. Many who work in the farming industries are farmworkers of Hispanic descent. The increase in the Hispanic population is result of increased opportunity in agricultural businesses and services. The majority live in low quality rental housing.
10. Of 93 families below the 1979 poverty level, 24% were female-headed households with children under 18 years of age.
11. No homeless persons have remained in the City for long periods of time, but tend to seek shelter for a few days. Each year 40 or more homeless persons, usually single males, have sought shelter especially at churches. If a shelter existed in Calistoga, it is estimated that it would be full every night. Through State legislation, the City is required to meet the needs of the homeless.
12. A significant amount of Calistoga's households overpay for housing costs. A majority of Calistoga's citizens are low income households.
13. Surveys indicate that housing unit condition is still a concern. Housing stock condition has been improved through the establishment of a Housing Rehabilitation Program. This program will continue through 1990 and will be significantly reduced thereafter.
14. Some problems with CDBG loan term requirements have been identified regarding retaining rental units for prior occupants.
15. Vacancy rates are low and units are sold or rented quickly. The market has been described as "tight."
16. There have been few demolitions in recent years.

17. Calistoga's regional share of housing is 28 units for existing needs and 310 units for projected needs through the year 1995.
18. Governmental constraints to the provision of affordable housing include RMS water to sewer infrastructure requirements. Some provision has been made for affordable housing fee reduction.
19. Specific density bonus provisions have been omitted from the proposed RMS amendment. Specified density bonus allowances are not included in City policy ordinances. Government Code Section 65915 et seq. require the institution of density bonuses or other incentives of equal financial value.
20. Of Federal and State programs identified in the 1985 Housing Element, only four programs have been utilized.
21. Interest rates affect the affordability of homes. At current interest rates, the necessary annual incomes exceed income estimates in most cases.
22. Infill residential land is available for growth and development.
23. There are limited amounts of land for multi-family development.
24. Some older residences have poor thermal capacity.
25. Participation in weatherization and energy conservation programs like HAND is low due to distance and sometimes language barriers.
26. No formal housing discrimination complaints have been filed with the Napa County Rental Information and Mediation Department. Phone inquiries have been received. Concerns include lack of units for larger families.
27. The City has not implemented several housing programs. In addition, objectives from the 1985 Housing Element have not been met.



PUBLIC SERVICES

PUBLIC SERVICES

INTRODUCTION

Public services in Calistoga are a main determinant of the City's existing and future development. Of the services discussed in this section, the development of water and wastewater services are the major issues that the City faces. In addition to these services, fire protection, police protection, solid waste, schools, and library services are discussed.

FIRE PROTECTION

The City of Calistoga is served by the City of Calistoga Volunteer Fire Department located at 1113 Washington Street and the California Department of Forestry located at 3535 St. Helena Highway. The City of Calistoga Fire Department is equipped with two 1,250 gallon per minute (gpm) pumpers, one 750 gpm pumper, one rescue vehicle, two tanker trucks, and one attack truck for wildland fires. The equipment is up to date and in good condition. The California Department of Forestry provides dispatch services to the City's Fire Department.

The Fire Department is staffed by 24 volunteer and 7 auxiliary firefighters. The Fire Department is currently beginning a program to recruit additional auxiliary firefighters. Response times out of the station is usually less than 3 minutes. Currently the City has 183 fire hydrants which deliver between 500 gallons per minute and 1,000 gallons per minute (phone interview, Mark Thomas and Jerry McCormick, October 6, 1989).

In recent years, the Department has experienced an increase in calls from approximately one call per week to approximately 1.5 to 2 calls per day. The increase in calls is due to medical service calls from the elderly in mobile home parks and to medical service calls from spas related to increasing tourism.

The increase in calls has strained volunteer staff. Employers of the volunteers cannot always release their employees. This has resulted in a loss of volunteers. The Department requires the addition of three paid professional firefighters to the staff of volunteers. Budget constraints have prevented staff augmentation (phone interview, Mark Thomas, November 17, 1989).

POLICE PROTECTION

Police services are provided to the City and vicinity by the City of Calistoga Police Department. The Department operates out of its headquarters at 1232 Washington Street and has nine sworn officers including the Police Chief and two sergeants. In addition, the Department is aided by three part-time reserves, and four dispatchers. The Department has assigned each sworn officer one patrol vehicle and is capable of responding to calls

on three minute average. The most common crime in Calistoga is theft and all offenders must be taken to the City of Napa jail for incarceration. The City of Calistoga maintains mutual aid agreements with all area law enforcement entities (La Casa Grande Resort Hotel EIR, April 1989).

Currently, an additional police facility is proposed at the intersection of Washington Street and 1st Street in Calistoga. The facility will be located across from the existing City Hall and the museum and will be 3,000 square feet in size (Richard Spitler, Planning and Public Works Director, November 7, 1989).

WATER

Three sources of water supply the City of Calistoga: the Kimball Reservoir, the Fiege well field, and the North Bay Aqueduct (Lake Hennessy water). The Ghisolfo Reservoir (Kimball Dam) was completed in 1939 and raised in 1948. The installation of flashboards at the spillway crest increased the safe yield of water from 120 million gallons to 140 million gallons. The water is settled, filtered, and chlorinated before entering the distribution system. The use of water is curtailed during the rainy season due to sediment problems. The installation of a clarifier is necessary to meet state water quality standards for turbidity. New water quality standards must also be met by 1993.

The City was awarded a grant from the Farmers Home Administration to complete the clarifier project. In addition funds remain available from the North Bay Aqueduct (NBA) pipeline project. Other revenues are also required to fund the project. Construction bids for the clarifier have been prohibitive in cost. The City has authorized the preparation of a bid to make water quality improvements (excluding the construction of the clarifier). These improvements include: longer chlorine contact time, a higher backwash, water flowrate, and a new step in the backwash process; and, filter to waste.

The Fiege well field consists of three bedrock wells and a one-million gallon storage tank. Bedrock wells draw water that has accumulated in the rock fissures of the surrounding area, and usually have a maximum capacity of only 50 to 100 gallons per minute (gpm). This yield is in sharp contrast to wells drilled in gravel aquifers that typically have capacities of 1,000 to 2,000 gpm. In addition to low yields, it is not uncommon for bedrock wells to run dry by the end of each summer before being recharged by the winter rains (Water Management Plan, January 1986).

The uncertainty of the well water supply has forced the City to operate these wells during periods of high demand, May through September. The total capacity of these three wells is approximately 65,000 gallons per day. Operating experience has proven that there is enough water stored within the surrounding area to allow these wells to operate twenty-four hours per day during the above period. The well-source water has a high mineral

content and must be chemically treated, filtered, and chlorinated prior to entering the distribution system via the million gallon storage tank (Water Management Plan, January 1986).

Prior to the completion of the City's NBA Pipeline in 1984, Calistoga was experiencing a severe water shortage. The pipeline conveys water from Lake Hennessey (Conn Creek). The amount of water available to Calistoga through the pipeline is regulated under an agreement between the City of Calistoga, the City of Napa, and Napa County Conservation and Flood Control District.

The City subsequently adopted a Resource Management System (RMS) whereby Calistoga's water supply allocation increases in stepwise fashion, with increases of 20 acre-feet per year up to a maximum allocation of 500 acre feet/year in the year 2003. Of the 20 acre-feet, 16 acre-feet are available to serve growth and 4 are assumed to be lost in the system. The RMS allocation for 1988-89 is 240 acre-feet.

NBA usage in 1987 and 1988 was 518 acre feet. As stated above, the total entitlement is 500 acre feet (Outdoor Resorts EIR, March 1989; Memo, 10/31/88 Jim Hughes to Mayor and City Council).

The RMS allocation system was updated in 1987. Currently, additional revisions have been proposed. The allocation system provides a framework within which to evaluate future developments, land uses, improvements, and modifications. It also establishes a schedule of water consumption for uses. The RMS is discussed in detail in the Land Use Section of the MEA.

The City's water distribution is depicted in Exhibit 7. The majority of the lines are 6 to 8 inches. Water pressure is low in some areas. The disrepair of the system has resulted in water leakage. If these leaks were repaired, approximately 100 acre feet/year could be saved. The City's water system requires update and repair in order to meet future demand (Richard Spitler, Planning and Public Works Director, November 7, 1989).

While resident and transient daily water use has remained stable and consistent, the dramatic increase in existing commercial and industrial use has pushed both existing sources past the City's available limits. Data for the two year period Fiscal Year 1986 to Fiscal Year 1988 show significant changes in use rates. The percent increases for this two year period are as follows: Total Sales, 27.5%; Residential, 3%; Transient, 25%; Commercial, 66%; and Industrial, 314%. The increase in Industrial sales is primarily due to bottling works and is far in excess of their Use Permit quotas.

Exhibit 7
Water System

Metered water usage for the past two months and total of Fiscal Year 1988-1989 is summarized on Table Z. Single-family residential uses were the highest consumer at 240.46 acre-feet for the Fiscal Year. The second largest consumers were the bottling works at 159.44 acre-feet for the Fiscal Year. Total water use equalled 810.54 acre feet. Actual production of water equalled 1,000 acre feet for the year. Approximately 190 acre feet are lost in the system due to backwash, hydrants and leakage. To help meet water demand the City contracted for 500 acre-feet of water from Yuba County, for the period April 1989 to January 1990. In addition, the City has applied for additional rights at Kimball Dam equalling 857 acre feet.

To meet current water demand and provide for future land uses as identified in the General Plan, the City Council has directed the Public Works Department to prepare a water development plan. Tentatively, seven different options have been posed:

- 1) NBA Contract Negotiation - Open discussions with the Napa County Conservation District and City of Napa regarding increase in NBA allocations or direct long term purchase of additional water.
- 2) Fiege Canyon Well Field - Investigate increasing production of existing wells and the potential for developing additional wells.
- 3) Flynnville wells - Open discussions with existing owners for testing and possible access or acquisition potential.
- 4) Pacheteau Wellsite (Flynnville) - A fresh water well was developed by the E.M.L. Corporation as part of a proposal to develop the Pacheteau resort area.
- 5) Solari Wellsite - Open discussions with existing owners for testing and possible access or acquisition potential.
- 6) Dredging of reservoir - Evaluate existing information and update engineered estimates and feasibility.
- 7) Raise dam - Evaluate existing information and update engineered estimates and feasibility.

The resource list is considered the most viable sources for analysis in a new water development plan (Memo, Jim Hughes to Mayor and City Council, March 1, 1989).

TABLE Z
FISCAL YEAR 1988-1989
METERED WATER CONSUMPTION (ACRE-FEET)

<u>Use</u>	MONTH		Total <u>FY 88-89</u>
	<u>May 89</u>	<u>June 89</u>	
Single Residence	21.02	27.66	240.46
Multi-Residences	8.65	9.29	102.21
Restaurants	1.5	1.82	19.69
Commercial General	4.21	5.13	48.25
Bed and Breakfast	1.10	1.31	12.87
Medical Care	1.64	2.05	17.44
Transient General	2.52	2.86	40.52
Public Buildings	1.02	1.39	10.39
Spas	4.06	4.30	45.29
Laundries	.52	.56	5.89
Bottling Works	13.76	12.80	159.44
Mobile Homes	8.22	10.04	93.09
Industry General	.08	.24	2.04
Campgrounds	.21	0	12.95
TOTAL	68.64	79.50	810.54

Source: City of Calistoga

WASTEWATER

The City of Calistoga provides wastewater treatment to residents and businesses. The City's wastewater treatment system is shown on Exhibit 8. Sewage lines range from six to ten inches in size. Like the water distribution system, the wastewater collection system is in disrepair. In addition, the wastewater treatment plant is in need of upgrading to meet water quality standards to meet capacity demands.

During the winter months with increasing rains, storm and groundwater flows increase and overtax the wastewater collection system and treatment. Higher flows affect deteriorating pipes and joints. Increased inflow and infiltration increases treatment costs.

The original wastewater treatment and disposal facilities were constructed and put into operation in 1961. The process facilities included a headworks, a primary sedimentation tank, two oxidation ponds, and a sludge digester. In 1971, post-chlorination of the effluent was added. In 1976, the plant was modified, adding tertiary treatment facilities. The tertiary expansion project included adding grit removal facilities, an aeration pond, algae drying beds, a flocculator, a final clarifier, pressure filters, a clearwell, and a land application system. In addition, the Recirculation Structure and Oxidation Pond No. 1 were modified. Subsequently, a reclaimed wastewater transmission pipeline was constructed and placed in operation in May 1980. Additional chlorination facilities were installed in 1981 and mechanical surface aerators were installed in Oxidation Pond No. 1 in 1986. Reclaimed wastewater irrigation facilities have been continually upgraded and expanded to meet the increasing demand for land disposal of the treated wastewater (Kennedy/Jenks/Chilton 1988).

The City of Calistoga provides wastewater treatment to residents and businesses. The Calistoga wastewater treatment plant presently serves a population of 5,000 people (including a daily transient population of 700) with an influent permitted average dry weather flow of 0.62 mgd. The existing treatment facilities provide a secondary treated effluent that meets standards for BOD and suspended solids concentrations of less than 30 mg/1 and median coliform of 23 MPN/100 ml, and a tertiary treated effluent that meets standards the BOD and suspended solids concentrations of less then 10 mg/1, median total coliform concentration of less than 2.2 MPN/100 ml, and turbidity of less than 2 NTU. The tertiary treatment meets the requirements, as stipulated in Article 4 of Title 22, Division 4 of the California Administrative Code issued by the State Department of Health Services, for landscape irrigation of golf courses, lawns, parks and playgrounds where the public has access (Kennedy/Jenks/Chilton 1988).

According to information provided in the Outdoor Resorts Draft EIR prepared in March 1989, the plant has a rated design capacity of .62 million gallons/day average daily dry-weather flow (ADDWF). A wet-weather limitation is not stipulated in the plant's waste discharge permit from the Regional Water Quality Control Board. In 1987 and 1988 flows

Exhibit 8
Wastewater System

were in excess of the rated capacity due to greater than expected flows from the mineral water companies and spas. As of May 1988, about .3 mgd of the total flow was due to these two sources of non-domestic flow.

The average dry weather flow permit limitation described previously is based on disposal capacity which reflects land disposal rates. Permanent land disposal sites include:

- golf course
- high school
- City irrigation fields
- City perc ponds
- little league fields
- Maximum field property (min. of 1,000 GPD)
- Calistoga Mineral Water

There are also sites where tenure is not secure:

- Fox Property
- Airport
- Frediani Storage Ponds (10 MG)

These sites are available on a month-to-month basis and may be terminated by the owner at 30 days notice. These sites are used regularly for disposal. Should these sites become unavailable, disposal capacity would be reduced.

The RWQCB has not found it necessary to impose a moratorium on new sewer connections because the water supply limitation has already created a moratorium on growth. The RWQCB recommends that each large multi-unit development, commercial or industrial development, proposal should be required to address the City's ability to treat its wastewater discharge (Jim Hughes, Memorandum May 17, 1988). Typical wastewater generation rates for Calistoga's customers are 151 gallons per day per residential unit, and 169 gallons/day per transient lodging unit (Outdoor Resorts EIR, March 1989).

In order to rectify existing deficiencies and plan for future growth, Wastewater Treatment and Disposal Facilities Plan Updates were prepared in 1986 and again in 1988. The May 1988 10-year plan outlines modular improvements and associated costs necessary to achieve certain increases in rated plant capacity between 1988 and 1997. Various improvements to the plant are designed to allow the quality of effluent to be maintained under higher wet weather flow conditions. Table AA outlines step-wise increases in capacity discussed in the 1988 Plan.

TABLE AA
TREATMENT PLANT CAPACITY

YEAR	MGD	
	ADDWF	Wet Weather Flow
1988	.75	
1989	.83	1.2
1990	Various improvements, no capacity increase	
1993-94	.95	2.0
1998-2000	.95+	3.0

Source: Outdoor Resorts EIR, March 1989

In December 1988, following an on-site inspection, the Regional Water Quality Control Board sent a report notifying the City that it was behind schedule in completing the planned 1988 improvements to increase its capacity rating to .75 mgd. At such time as the improvements were completed the City could then demonstrated to the Board that it was meeting the water quality standards for tertiary effluent to allow its permit to be amended to .75 mgd ADDWF (Outdoor Resorts EIR, March 1989).

The Draft 10-Year Plan was given to the Board for review at the December visit, but the Board does not approve the Plan in its entirety. It remains for the City to demonstrate that each of the stepwise increases in capacity have been implemented by showing that under the higher flows, water quality standards in the effluent are being maintained.

The RWQCB has requested that the City submit a budget plan, showing how the funds to finance the necessary improvements will be forthcoming. Funds to finance the necessary sewer improvements come from developer fees for new growth. This system has been in place since the early 1980's. The City has established sewer connection fees of \$1,575 per residential unit or per connection as well as fees for uses generating wastewater in commercial or industrial buildings such as clothes washers, dishwashers, sinks, toilets, etc. In addition, the City has imposed a one-time delivery fee of \$1,212 per person or person-equivalent for residential and hotel/motel facilities and \$1,212 per employee, divided by the number of restrooms, for industrial or other business uses. The purpose of this fee is to offset the costs of expanding the sewage treatment plant to accommodate increased flows from growth. The cost of the improvements necessary to increase capacity to .75 mgd are \$320,000 and the full cost of the 10-Year program was estimated, per the June 1987 resolution at \$2,598,000 (Outdoor Resorts EIR, March 1989).

Several Priority 1 improvements are identified in the City's 1988 Wastewater Treatment and Disposal Facilities Plan Update. The purpose of the Priority 1 Improvements is to rectify NPDES permit violations, correct deficiencies and accommodate average dry weather flow at .75 mgd for a 1 in 10 dry year. Of twelve actions to be completed by 1989, two have been implemented: improvement of pond effluent disinfection, and modification of flow monitoring (Steve Anderson, October 1989).

In addition to planning and implementing improvements, the City has been adhering to a source control plan to limit flows and improve effluent quality. This program includes 1) industrial adherence to the "national pre-treatment program", (2) successful reduction of flows based on recently increased sewer use rates; and (3) conservation education of the City's consumers. The development and implementation of source control measures by the City and cooperation of the commercial and industrial users has resulted in a dramatic decrease in total influent to the plant. Calistoga Mineral Water Company through the installation of a water reclamation system is primarily responsible for this dramatic decrease (Memo, Jim Hughes to Mayor and City Council, September 2, 1988).

STORM DRAINS

The current storm drain system is depicted on Exhibit 9. As indicated the system is extensive in the developed portions of the City. The system is now inadequate for current and future needs since it is old, undersized, and difficult to maintain.

Currently, funds are insufficient to repair identified problems. A Capital Improvement Plan (CIP) is necessary to address the system's upgrade. The status of the storm drain system has become a deterrent to development (Richard Spitler, Planning and Public Works Director, November 7, 1989).

SOLID WASTE

The City of Calistoga is served by the Cloverflat Landfill is located south of the City of Calistoga in the northwestern portion of the County. This facility has been accepting solid waste from this area since 1963. The primary waste hauler is the Upper Valley Disposal Service. The landfill receives approximately 33,000 tons of municipal solid wastes per year consisting of residential wastes, debris-box material, commercial and industrial wastes, and plant debris. The landfill also receives plant debris from Yountville especially during the fall (Cloverflat Landfill, Inc., May 1989).

The current refuse fill area occupies 12 acres of a 112-acre parcel, which will reach capacity in approximately 6 to 8 years (1995 to 1997). The landfill is currently proposing expansion to increase the refuse fill area to 43 acres. The expansion would add approximately 28 years to the remaining 6 to 8 years of site life (Cloverflat Landfill, Inc., May 1989) and would adequately serve the City's needs.

SCHOOLS

The City of Calistoga is served by the Calistoga Joint Unified School District. The District operates three main facilities: Calistoga Elementary School (K-6), Calistoga High School (7-12) and a continuation school (9-12). The District serves the City and County residents located in the upper northwest corner of the County. Currently six students live outside of the district and attend schools within the Calistoga Joint Unified District, and twenty students live within the district, but attend schools outside the district.

Enrollment data is provided by the State Office of Local Assistance each year. The most recent figures became available in March 1989. For the 1988/89 school year the average daily attendance totaled 783. Table BB shows the Estimated Average Daily Attendance beginning with the 1985/86 school year through 1988/89. Currently, the Elementary School is at capacity. The High School has enough space for 50 to 60 more students. Due to the small amount of campus space, the District is considering the purchase of another school site (John Burke, October 1989). Future enrollment projection are presented on Table



Source: City of Calistoga



STORM DRAIN SYSTEM

MASTER ENVIRONMENTAL ASSESSMENT

City of Calistoga



Exhibit 9

TABLE BB
ESTIMATED AVERAGE DAILY ATTENDANCE

Level	YEAR			
	85/86	86/87	87/88	88/89
K-6	364	389	419	435
7-8	104	108	109	119
9-12	185	184	198	229
TOTAL	653	681	726	783
Annual Chg		28	45	57

Source: State Office of Local Assistance, March 30, 1989

TABLE CC
PROJECTED AVERAGE DAILY ATTENDANCE

Level	YEAR					
	89/90	90/91	91/92	92/93	93/94	94/95
K-6	459	494	533	593	630	681
7-8	128	130	129	118	134	157
9-12	241	262	283	284	292	283
TOTAL	828	886	945	995	1056	1121
Annual Chg	45	58	59	50	61	65

Source: State Office of Local Assistance, March 30, 1989

CC. As indicated by the 1994/95 school year the number of students will increase by 43% to 1,121 students in comparison to 1988/89 figures. The District would have to provide additional facilities to meet the projected student enrollment.

LIBRARY

The Napa City County Library provides library service to the City of Calistoga. The branch library is located at the northwest corner of Lincoln Avenue and Myrtle Street. The Library provides 38 hours of service per week. Library personnel include two library assistants and one vocational assistant. It is a full service library providing books, magazines, and other items.

Though the County feels adequate capacity exists to serve the local area, there are several constraints. Library service hours have been reduced. Relative to other libraries, the volume of books is low. The building requires improvement due to its age and demand for increased volumes. In addition, off-street parking is not available. Improvements will be necessary to meet the needs of the growing senior citizen population.

OTHER CITY SERVICES

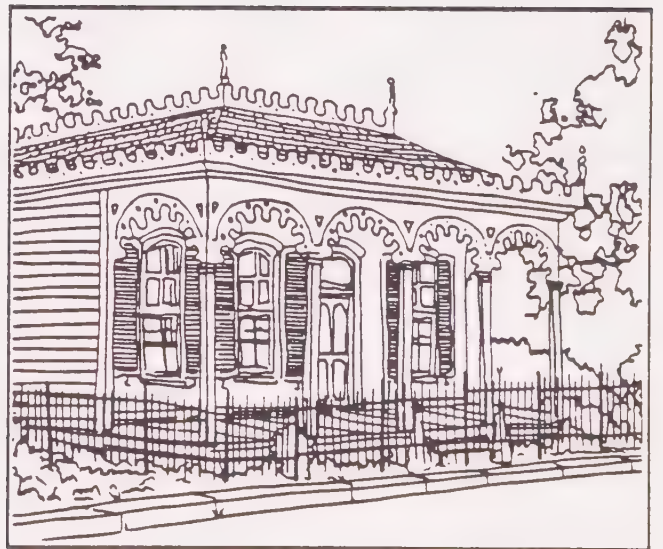
City administrative services are scattered throughout the City. The majority of administrative services are housed in the old City Hall located at 1232 Washington Street. Planning and Public Works divisions are located in trailer facilities at 414 Washington Street. These facilities may not be adequate to accommodate growing staff needs.

In addition, the Community Center located at 1307 Washington Street is in need of expansion. This is due to the growth of the general population as well as the senior citizen population.

FINDINGS

1. Higher service calls, especially for medical attention, have increased burdens upon the Fire Department. There is an immediate need for at least 3 additional paid professional staff.
2. Police protection is adequate to serve current City needs.
3. Water supply is a critical issue to the City. Funds need to be collected in order to install the clarifier on Kimball Dam and reduce the City's dependency on NBA water. Additional water sources need to be found to meet foreseeable needs.
4. Water conservation measures should be practiced by residents and businesses.

5. The water distribution system is in need of repair and expansion.
6. Wastewater Treatment Plant improvements have not taken place on schedule. The improvements are necessary to rectify NPDES permit violations and correct deficiencies. Greater flows can be attributed in part to mineral water companies and spas. Some influent flows to the plant have been reduced through water reclamation measures adopted by local industry. Funds are needed to enhance treatment capacity.
7. The Cloverflat Landfill adequately serves the City. In order to lengthen the life of the landfill, an expansion plan is currently being proposed to the County.
8. Tenure of land disposal sites needs to be secured to allow discharge of effluent and install more efficient discharge systems.
9. Increased inflow and infiltration rates in winter months contribute to wastewater collection system deterioration, and result in higher treatment costs.
10. The stormdrain system is in disrepair and is a deterrent to development. A Capital Improvement Plan is necessary to address deficiencies.
11. Currently, the School District adequately serves the City and others located in the District. The addition of more students at the K-6 level will tax existing facilities. Campus sizes are small. The District is examining the possibility of purchasing an additional site for school uses. Existing facilities are not adequate to serve the number of students projected in the 1994/95 school year.
12. Existing library services are inadequate for the City and service area due to reduced service areas, low book volume, facility age, and lack of off-street parking.
13. Many City facilities may need expansion to meet the needs of a growing community. These facilities include City administrative offices and the Community Center.



TRAFFIC/CIRCULATION

TRAFFIC AND CIRCULATION

INTRODUCTION

The Traffic and Circulation section is a summary of information provided in the Traffic Analysis and Circulation System Assessment General Plan Update (December 1989), prepared by Allan G. Tilton. This technical report is available for review at the City of Calistoga Planning Department.

VEHICULAR TRANSPORTATION

Circulation System

The existing circulation system in the City of Calistoga and its surrounding County areas has been influenced by two geographical features. These features include mountainous terrain and the Napa River which traverses the area from west to east.

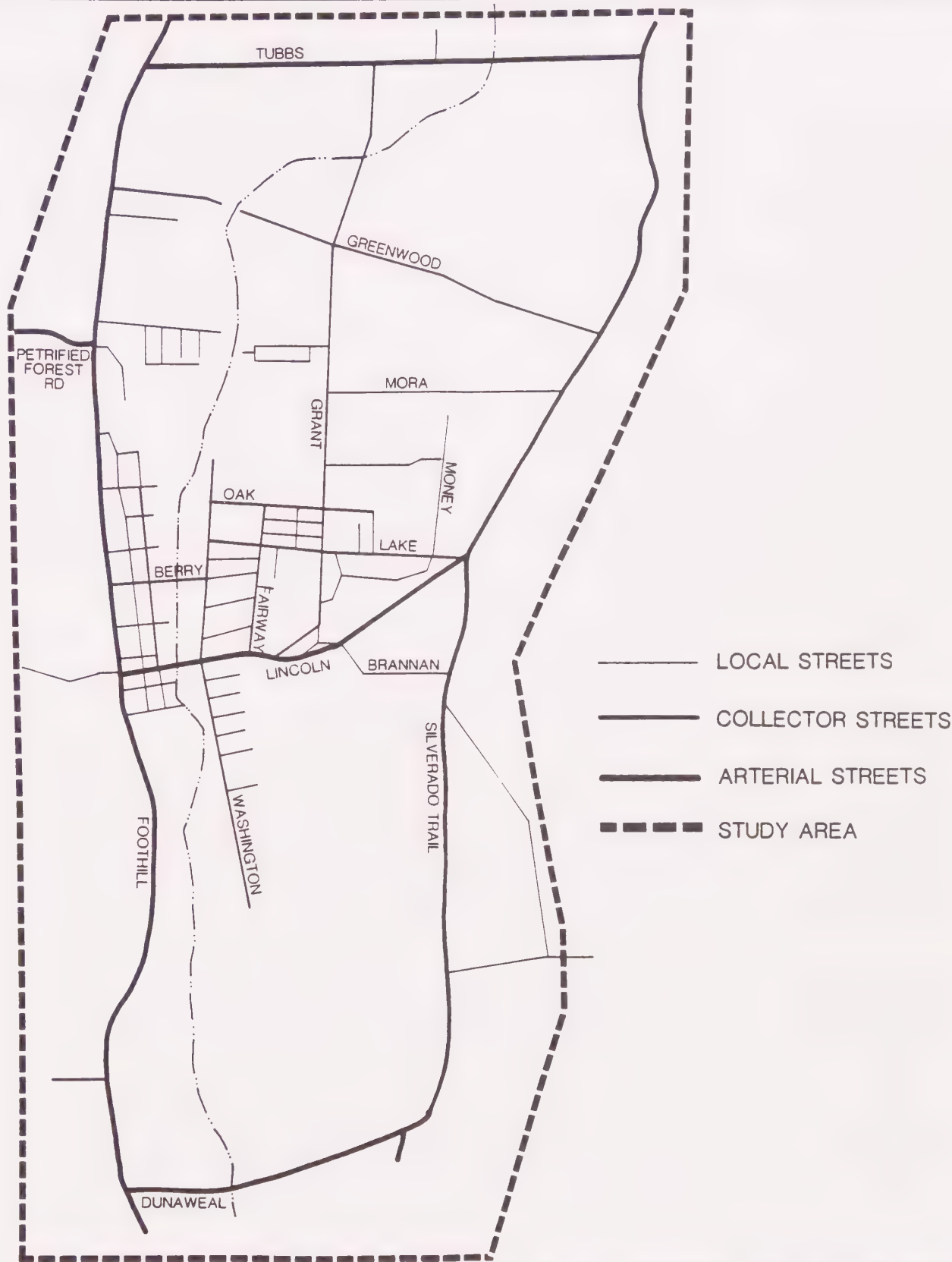
The existing circulation system within the Study Area consists of two nearly parallel east/west roadways; Foothill Boulevard/State Route 128 and Silverado Trail/State Route 29. Principal north/south streets and roadways are Tubbs Lane, Lincoln Avenue (State Route 29) and Dunaweal Lane. A dense grid street system serves the central core area of the City. Beyond the downtown core area the street and roadway network becomes rural in character. Please refer to Exhibit 10 for a map of the City of Calistoga circulation system.

All State Highways, County roadways and City streets have two travel lanes. Traffic volumes on State Highway 29 and State Highway 128 are higher than on City streets. The intersection of Lincoln Avenue (State Route 29) and Washington Street is signalized.

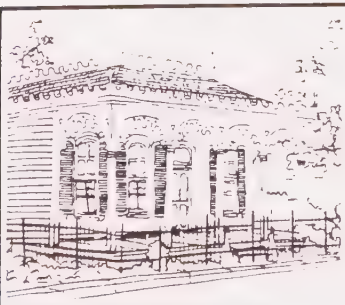
Street Classifications

The City street network is comprised of several street types and classifications. Street systems (networks) include local streets which serve as access to individual properties, arterial streets which serve the movement of vehicles, and collector streets which serve as a transition between local and arterial streets. Arterial, collector and local streets serve different functions within the circulation network and have different design requirements.

Street classifications have been assigned to the existing streets. The classification is based upon the functional characteristics that the street emulates. The following are the functional street classifications as determined by Allan G. Tilton, P.E., consulting traffic engineer:



Source: Allan G. Tilton Ph.d.



CITY OF CALISTOGA CIRCULATION SYSTEM MASTER ENVIRONMENTAL ASSESSMENT City of Calistoga

STA inc.
no scale



Exhibit 10

Arterial Streets

Foothill Boulevard/State Route 128
Lincoln Avenue/State Route 29
Silverado Trail
Tubbs Lane
Dunaweal Lane
Petrified Forest Road

Collector Streets

Washington Street	Grant Street
Lake Street	Berry Street
Cedar Street	Oak Street
Brannon Street	Fair Way
Mora Avenue	Greenwood Avenue
Money Lane	

Local Streets

All other streets

Existing Vehicular Traffic

The existing vehicular analysis provides a discussion of noticeable traffic congestion, level of service, peak hour analysis, and circulation improvements. Three areas of noticeable traffic congestion have been observed in the City of Calistoga. The three locations are discussed below.

1. The downtown core area on Lincoln Avenue (State Route 29) between Cedar Street and Fair Way is congested. Congestion at this location is due in part to existing angled parking on Lincoln Avenue, high pedestrian activity, and parking maneuvers.
2. The intersection of Lincoln Avenue at Foothill Boulevard is congested during peak periods of traffic flow. The intersection of Lincoln Avenue at Foothill Boulevard is controlled by a Four-Way STOP sign. High vehicle turning movement volumes, together with limited roadway width, contribute to the congestion at this intersection.
3. The intersection of Foothill Boulevard at Petrified Forest Road is congested during peak periods of traffic flow. The intersection of Foothill Boulevard is controlled by a STOP sign on Petrified Forest Road. Traffic on Petrified Forest Road is required to stop while traffic on Foothill Boulevard is free flowing. High vehicle turning

movement volumes, together with limited roadway width, contribute to the perception of congestion at this intersection.

Levels of Service

The concept of levels of service (LOS) is a measure to describe the conditions within a traffic stream and their perception by motorists and passengers. An LOS definition generally describes these conditions in terms of such factors as speed and travel time, delay, freedom to maneuver, traffic interruptions, comfort and convenience, and safety.

Six levels of service are defined for each type of facility that is analyzed. They are given letter designations, from A to F, with LOS A representing the best operating conditions and LOS F the worst. Table DD gives a description of each level of service.

All intersections within the area are operating at acceptable levels with three exceptions. The intersection of Foothill Boulevard at Petrified Forest Road is operating at LOS E for left turn movements from Petrified Forest Road to Foothill Boulevard. The intersections of Lincoln Avenue at Foothill Boulevard and Lincoln Avenue at Silverado Trail are operating at LOS D each.

Traffic volumes on Berry Street and Lake Street indicate that these streets serve as bypass streets. Local residents use these streets to avoid the congestion which occurs on Lincoln Avenue in the downtown core area.

Peak Hour Analysis

The level of service concept is related to traffic during the peak 15 minutes of the peak hour. In the study area there are two peak periods of traffic flow. Average daily trips and peak hour volumes are shown on Table EE. In the morning the peak occurs during the commute hour, 7:30 to 8:30 AM, while the evening peak occurs during the evening commute hour, 4:30 to 5:30 PM. The highest traffic flow occurs during the PM peak hour. For this reason the analysis is done for the evening peak hour traffic conditions.

Circulation Improvements

The following are measures needed to address the existing circulation system in the City of Calistoga. These measures include physical and operational improvements. Physical improvements include addition of lanes, alternative route construction, and signal installation. Operational improvements include signal timing, optimization, on-street parking, public transportation, and system management.

TABLE DD
DESCRIPTION OF LEVELS OF SERVICE FOR STREET SEGMENTS

LEVEL OF SERVICE	VOLUME/ CAPACITY RATIO	ARTERIAL STREET	COLLECTOR	LOCAL
Volume Vehicle Per Hour				
A	.04	92	79	69
B	.16	357	313	270
C	.32	714	626	541
D	.57	1335	1144	989
E	1.00	2340	2305	2181

Source: Allan G. Tilton, P.E. 1989

TABLE EE
EXISTING VOLUMES AND LEVELS OF SERVICE
AT SELECTED STREET SEGMENTS

STREET	DAILY TRAFFIC VOLUME	PEAK HR. VOLUME	LEVEL OF SERVICE
Lincoln Avenue			
Foothill-Cedar	9230	790	D
Cedar-Washington	10150	865	D
Washington-Silverado	8660	735	D
n/o Silverado	5220	650	C
Foothill Boulevard			
Dunaweal-Lincoln	8735	910	D
Lincoln-Berry	7630	795	D
Berry-Pet. Forest	7630	810	D
Pet. Forest-Tubbs	5290	555	C
Silverado Trail			
Dunaweal-Lincoln	2705	250	B
Cedar Street			
e/o Lincoln	810	75	A
Lincoln-Berry	1030	85	B
Berry-Oak	920	90	B
Washington Street			
e/o Lincoln	4275	260	B
Lincoln-Berry	3425	230	B
Berry-Lake	2055	170	B
Lake Street			
Fair Way-Grant	1990	125	B
Grant-Lincoln	1660	140	B
Continued			

TABLE EE (Cont.)

EXISTING VOLUMES AND LEVELS OF SERVICE
AT SELECTED STREET SEGMENTS

STREET	DAILY TRAFFIC VOLUME	PEAK HR. VOLUME	LEVEL OF SERVICE
Berry Street			
Foothill-Cedar	1765	145	B
Cedar-Washington	2585	250	B
Grant Street			
Stevenson-Lake	1535	135	B
Lake-Michael	1525	145	B

Source: Allan G. Tilton, December 1989

Note: n/o = north on
e/o = east on

Physical Improvements:

- Realignment of Silverado Trail/Lake Street at Lincoln Avenue.
- Provide left turn lanes at:
 - Foothill Boulevard at Petrified Forest Road
 - Lincoln Avenue at Silverado Trail
 - Highway 29 (Lake County Highway) at Mora Avenue
- Signalization of:
 - Foothill Boulevard at Petrified Forest Road
 - Foothill Boulevard at Lincoln Avenue
 - Lincoln Avenue at Silverado Trail
- Widen Foothill Boulevard to 64 feet curb-to-curb. This improvement will accommodate four travel lanes together with left turn lanes at intersections or bicycle lanes.
- Widen Grant Street to 40 feet curb-to-curb. This improvement will accommodate two travel lanes together with left turn lanes at intersections or bicycle lanes.

Operational Improvements:

- Provide bike lanes on all arterial and collector streets.
- Consider installation of signing to divert through truck traffic from the downtown core.

1977 General Plan Buildout

Levels of Service

The population projections upon which the travel model are based is the current City of Calistoga General Plan. The projections include a population of 6,000 persons by the year 2000. The major areas of future population increase are expected to occur in the northwesterly and northeasterly quadrants of the City.

Employment projections are expected to increase in both retail and non-retail sectors. The principal retail employment areas are anticipated to develop adjacent to the Lincoln Avenue corridor. Non-retail employment is anticipated to occur in the northeasterly

quadrant of the City adjacent to Silverado Trail and Washington Street. Trips generated by the existing and anticipated development of lands within the City of Calistoga are assigned to the existing circulation network. The traffic network model is then used to evaluate the travel patterns of future trips.

Projected traffic volumes on selected street segments are compared to existing traffic volumes. Traffic volumes in the downtown core area on Lincoln Avenue will remain near current values. Traffic congestion occurs on Lincoln Avenue between Cedar Street and Fair Way and traffic volume increases on Lincoln Avenue will be limited by existing constraints. Traffic volume increases which cannot be accommodated on Lincoln Avenue will be diverted to other city streets. Table FF shows projected traffic volumes together with volume to capacity ratios and level of service for selected street segments.

Traffic volume increases resulting from future development are anticipated. Traffic patterns show that traffic volumes on many collector streets will increase significantly. Traffic volumes will increase significantly on Berry Street and its tributaries. Berry Street crosses the Napa River between Cedar Street and Washington Street and provides an alternative to Lincoln Avenue.

Level of Service with Circulation Improvements

This analysis includes planning guidelines and physical circulation improvements. The physical circulation improvements effect upon the City circulation system is quantified in Table GG. The following planning guidelines are recommended:

- Prohibit direct driveway connections from single-family residence dwelling onto arterial and collector streets.
- Minimize multi-family and commercial driveway connections to arterial streets.
- Provide adequate off-street parking within the downtown core.
- Require the construction of sidewalks on all residential, collector, and arterial streets.

The following physical circulation improvements are recommended by the Consultant to address the projected future needs:

- Extend Money Lane to Mora Avenue
- Extend Washington Street to Dunaweal Lane.

TABLE FF
GENERAL PLAN BUILDOUT

Street	Street Class	Daily Traffic Volume	Vol/Cap	LOS
Lincoln Avenue				
Foothill-Cedar	A	9515	.41	D
Cedar-Washington	A	9950	.43	D
Washington-Silverado	A	9240	.37	D
n/o Silverado	A	7930	.34	D
Foothill Boulevard				
Dunaweal-Lincoln	A	8840	.38	D
Lincoln-Berry	A	9275	.39	D
Berry-Pet. Forest	A	9725	.42	D
Pet. Forest-Tubbs	A	5395	.23	C
Silverado Trail				
Dunaweal-Lincoln	A	4280	.18	C
Cedar Street				
Lincoln-Berry	C	1875	.08	B
Berry-Oak	C	1730	.08	B
Washington Street				
e/o Lincoln	C	11475	.50	D
Lincoln-Berry	C	9590	.42	D
Berry-Lake	C	5430	.24	C
Lake Street				
Fair Way-Grant	C	4750	.21	C
Grant-Lincoln	C	2805	.12	B
Berry Street				
Foothill-Cedar	C	5810	.25	C
Cedar-Washington	C	3875	.17	C

TABLE FF (Cont.)
GENERAL PLAN BUILDOUT

Street	Street Class	Daily Traffic Volume	Vol/Cap	LOS
Grant Street				
Stevenson-Lake	C	1970	.09	B
Lake-Michael	C	3880	.17	C

Source: Allan G. Tilton, P.E. (1989)

Notes: n/o = north on
e/o = east on

TABLE GG

GENERAL PLAN BUILDOUT WITH CIRCULATION IMPROVEMENTS

Street	Street Class	Daily Traffic Volume	Vol/Cap	LOS
Lincoln Avenue				
Foothill-Cedar	A	9860	.42	D
Cedar-Washington	A	10240	.44	D
Washington-Silverado	A	8140	.35	D
n/o Silverado	A	5820	.25	C
Foothill Boulevard				
Dunaweal-Lincoln	A	5515	.24	C
Lincoln-Berry	A	8280	.35	D
Berry-Pet. Forest	A	8970	.38	D
Pet. Forest-Tubbs	A	4570	.20	C
Washington Street				
e/o Lincoln	C	6830	.30	C
Lincoln-Berry	C	7075	.31	C
Berry-Lake	C	5570	.24	C
Sparrow-Dunaweal	C	690	.03	A
Lake Street				
Fair Way-Grant	C	5410	.23	C
Grant-Lincoln	C	2350	.10	B
Berry Street				
Foothill-Cedar	C	2210	.10	B
Cedar-Washington	C	1375	.06	B
Grant Street				
Stevenson-Lake	C	1310	.06	B
Lake-Michael	C	4485	.19	C

TABLE GG (Cont.)

GENERAL PLAN BUILDOUT WITH CIRCULATION IMPROVEMENTS

Street	Street Class	Daily Traffic Volume	Vol/Cap	LOS
Sparrow or Lark Street Foothill-Washington	C	3385	.15	B
Greenwood Avenue or Alternative Routes Napa River Bridge	C	4085	.18	C
Oak Street Cedar-Washington	C	1025	.04	A

Source: Allan G. Tilton, P.E. (1989)

- Construct a new street crossing of the Napa River at Oak Street.
- Construct a new street (Sparrow Street or Lark Street) and crossing of the Napa River between South Washington Street and Foothill Boulevard.

Traffic volume projections are made using the modeling process to determine to impact of the modified street network. The traffic model distributes the traffic volumes to the modified street system. Traffic volumes are assigned to streets based upon street capacity, demand, and shortest path from one zone to another.

The projected traffic volume on some of the proposed streets will be significant. The new Napa River crossings at Greenwood Avenue (Mitzi or in between), Oak Street and the proposed crossing at Sparrow or Lark Street will have a significant impact upon projected travel patterns. The extension of Money Lane to Mora Avenue and Washington Street to Dunaweal Lane, and intersection improvements at Lincoln Avenue at Silverado Trail, will have minor traffic diversion impacts. Table GG shows projected traffic volumes together with volume to capacity ratios and level of service for selected street segments.

Recommended Street Standards

Circulation design standards for new streets were reviewed by the traffic consultant. Suggested design criteria as presented by the Institute of Transportation Engineers, Transportation and Land Development, and Recommended Guidelines for Subdivision Streets, represent practical guidelines for new street construction. Table HH summarizes the various recommended street design elements. Recommended City Street cross-sections are shown in Exhibits 11 to 14.

PARKING

Parking Supply

The downtown core of the City of Calistoga serves as the commercial, office, and government center of the community. The downtown core consists of the three block segment of Lincoln Avenue between Cedar Street and Stevenson Street.

The downtown core area provides a wide range of commercial enterprises. Commercial activity within the core serves both area residents and visitors. Services which are often associated with daily community activities are found in the downtown core. These activities include grocery stores, pharmacies, hardware and dry goods stores, banks, and governmental services. Tourist-commercial activities include resort hotels, restaurants and specialty shops.

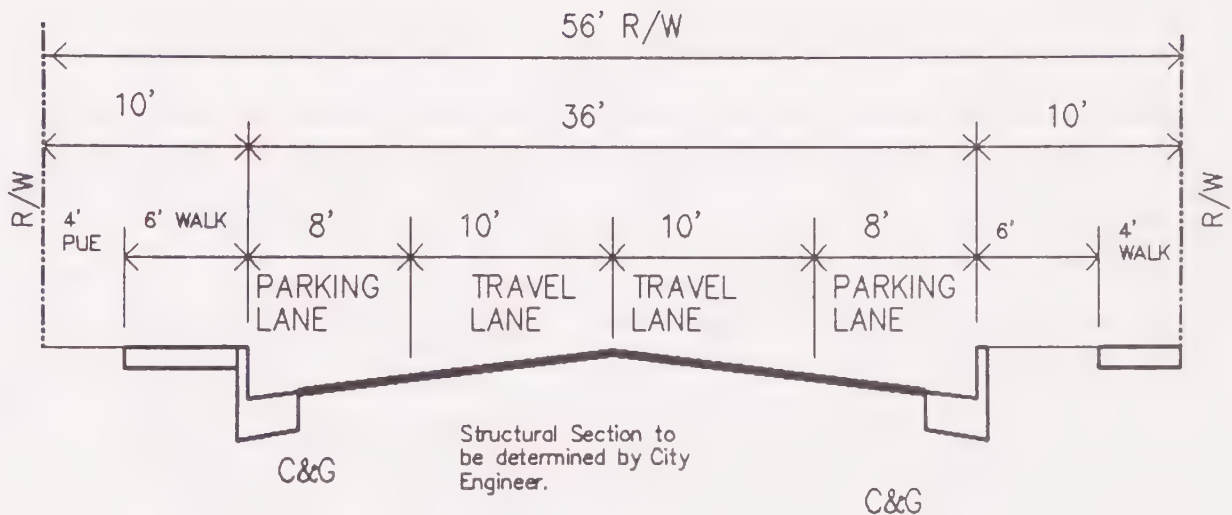
TABLE HH

**SUMMARY OF RECOMMENDED
STREET DESIGN ELEMENTS**

Design Feature	Local Streets	Collector Streets	Arterial Streets
Street Width	36 Feet	40 Feet	48 Feet
Centerline Radii	175 Feet	300 Feet	1000 Feet
Stopping Sight Distance	150 Feet	200 Feet	350 Feet
Maximum Grade	12%	8%	6%
Minimum Cul-de-Sac Radii	40 Feet(1)	n/a	n/a
Right-of-Way	50 Feet	60 Feet	80 Feet
Minimum Street Off-Set	125 Feet	150 Feet	300 Feet
Sidewalk Width	4 Feet	4 Feet	6 Feet
Design Speed	25 MPH	25-30 MPH	35 MPH

Source: Alan G. Tilton, P.E. 1989

Note: (1) No parking within cul-de-sac.



NOTES:

Actual Local street cross-section can be subject to parking provisions as specified with a Specific Plan.

Source: Allan G. Tilton



LOCAL STREET SECTION

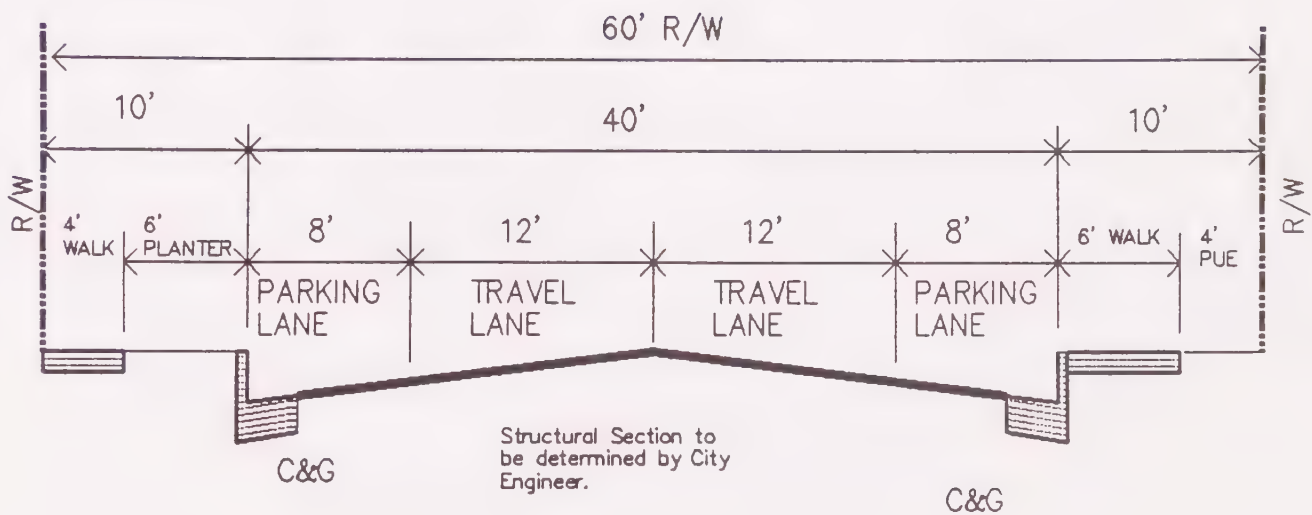
MASTER
ENVIRONMENTAL ASSESSMENT
City of Calistoga

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Exhibit 11

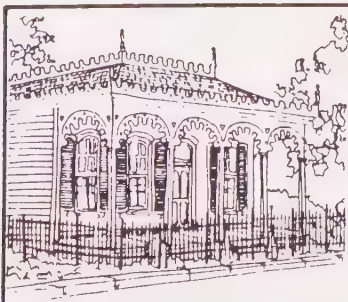


NOTES:

Turn lanes may be provided at intersections with the removal of parking.

Four-foot bicycle lane can be added.

Source: Allan G. Tilton



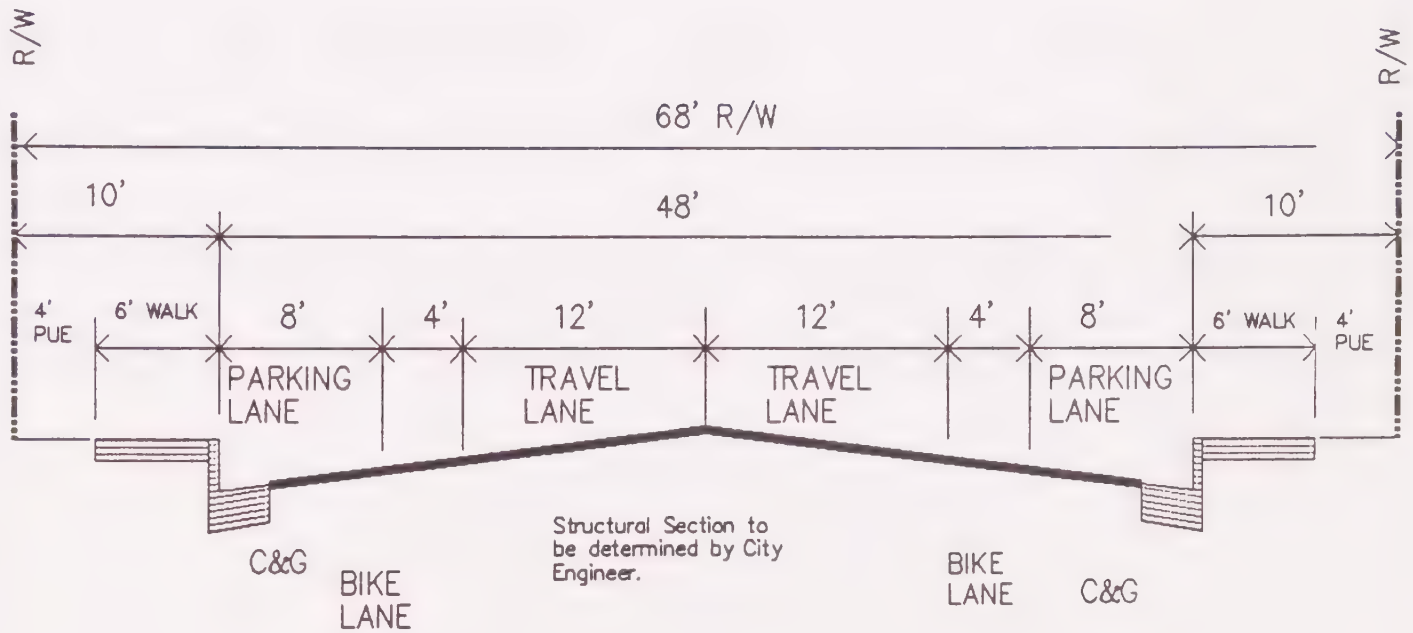
COLLECTOR STREET SECTION

MASTER
ENVIRONMENTAL ASSESSMENT
City of Calistoga

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Exhibit 12

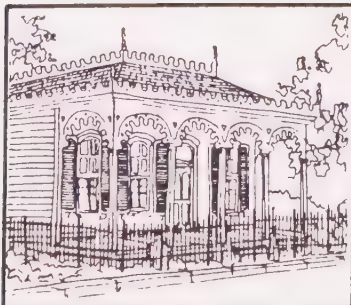


NOTES:

Turn lanes may be provided at intersections with the removal of parking.

Four-foot bicycle lane can be added.

Source: Allan G. Tilton



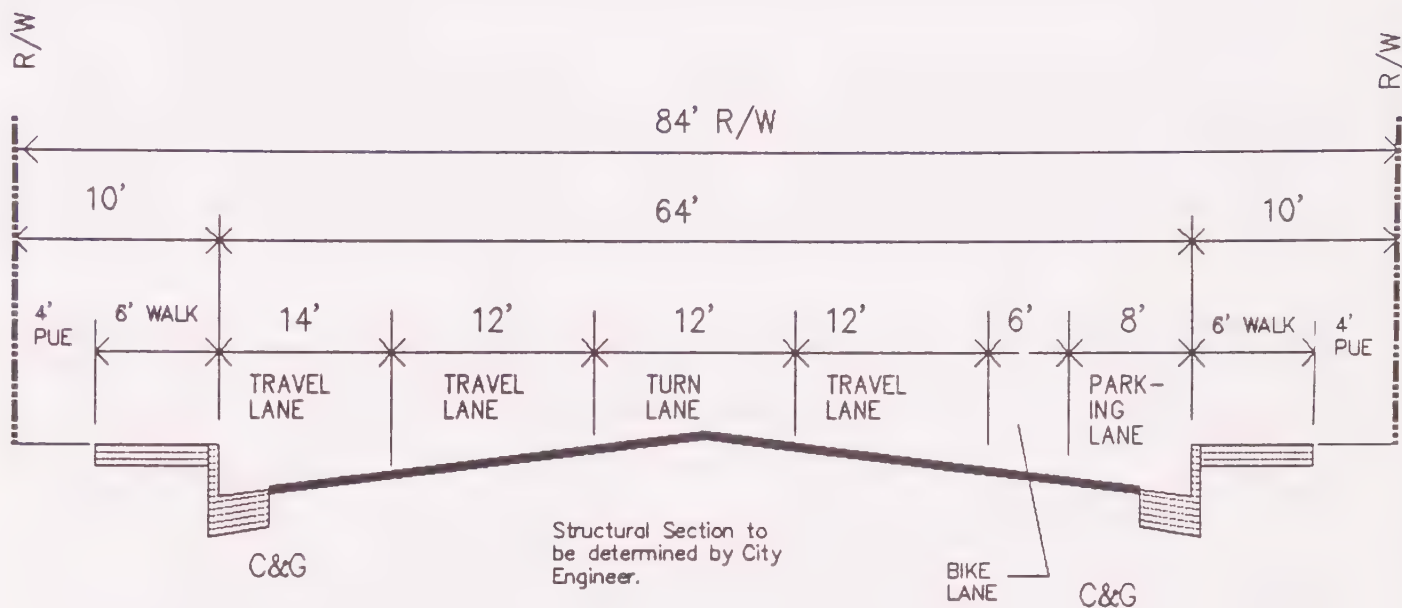
MAJOR COLLECTOR STREET SECTION

MASTER ENVIRONMENTAL ASSESSMENT City of Calistoga

STA inc.
no scale



Exhibit 13



NOTES:

Turn lanes may be provided at intersections with the removal of parking.

Six-foot bicycle lane can be added.

Alternative street lane configuration to be determined by City.

Source: Allan G. Tilton



ARTERIAL STREET SECTION

MASTER
ENVIRONMENTAL ASSESSMENT
City of Calistoga

STA inc.
no scale



Exhibit 14

The need for adequate parking within the downtown core is an objective of all factions of the community. Residents wish to find convenient parking when shopping or conducting business downtown. Merchants and business people likewise want adequate parking for customers and employees.

When parking needs within the downtown core are not met parking demand can overflow into adjacent residential neighborhoods. Residents within the affected neighborhood can experience inconveniences caused by parking overflow. Prospective customers of community and tourist oriented retail shops can be discouraged by lack of adequate parking.

The existing parking supply is inventoried as part of this study. Parking within the downtown core consists of on-street parking, public off-street parking and private off-street parking. Table II summarizes the available parking within the downtown core.

Parking Demand

The downtown core was evaluated to determine parking need. Available retail, commercial and office space has been inventoried. The downtown core currently provides approximately 450,000 square feet of commercial, office and retail space. The parking supply within the downtown core area is approximately 666 spaces.

The City of Calistoga Zoning Ordinance establishes rates for specific land use categories. Commercial off-site parking requirements range from one parking space for each 100 square feet of leasable floor space for restaurants to one space for each 250 square feet of leasable floor space for office uses. Assuming an average parking demand of one space per 200 square feet of leasable floor space, the total downtown parking demand is 2,250 parking spaces. The projected parking shortfall within the downtown core area using City Zoning requirements is 3-to-1.

Parking demand within the downtown core varies by land use categories and by time of day. Large commercial shopping centers provide a wide range of services and commercial opportunities that are similar to the services offered within the downtown core. For the purposes of this analysis it is assumed that the downtown core area corresponds to a large commercial shopping center.

The projected parking demand for a shopping center of 450,000 square feet of leasable floor area is 1,410 parking spaces. The parking demand based upon a shopping center comparison is significantly less than the projected aggregate demand for individual uses. The projected parking demand upon individual land uses and shopping center comparison exceeds the reservoir of available parking supply. The projected parking demand based

TABLE II
EXISTING PARKING SUPPLY

AMOUNT	TYPE	
	On-Street	137
	Off-Street	
	Public	117
	Private	412
	TOTAL	666

Source: Allan G. Tilton, P.E. (1989)

upon individual land uses exceeds the parking supply by 3-to-1. The projected parking demand based upon the shopping center comparison exceeds the parking supply by a 2-to-1 margin.

It is the opinion of the Traffic Consultant that the City of Calistoga will need to establish a comprehensive program to address parking shortfalls in the downtown core area. A comprehensive program should include the following:

1. Establish a Downtown Parking Committee to evaluate alternative parking strategies to achieve a balanced parking plan for the downtown core area.
2. The City should adopt new off-street parking standards.
3. The City should adopt a policy establishing the first and second parking spaces adjacent to intersections in the downtown core area as limited time (20-minutes) spaces. This improvement will provide high turnover parking spaces and will facilitate the short term parking needs of local residents.
4. The City should provide additional directional signing to City parking facilities.

Suggested off-street standards are shown in Figures 22 through 24 of the General Plan Traffic Assessment prepared by Allan G. Tilton available at the City of Calistoga Planning Department.

PUBLIC TRANSPORTATION

The City of Calistoga uses a subsidized private taxi service as its primary means of public transit. The service requires 24-hour advance notice for usage, and does not operate on a fixed route schedule. The City also partially subsidizes the Tri-City Express Bus service, a bus that operates on a regional level.

BICYCLE

Table JJ contains definitions of the bicycle classifications. Exhibit 15 shows the location of proposed bicycle lane facilities. Bicycle lanes on arterial streets are recommended to be Class II Bikeways while Class III Bikeways are proposed on selected Collector Streets. A proposed Class I (Separated Bikeway) is considered adjacent to the Napa River between Pioneer Park and Garrard Street.

TABLE JJ
BICYCLE FACILITY DEFINITIONS

BIKEWAY CLASSIFICATION	DESCRIPTION
Class I	A completely separated right-of-way is designated for the exclusive use of bicycles. Vehicle and pedestrian cross flow are minimized.
Class II	A restricted right-of-way is designated for the exclusive or semi-exclusive use of bicycles. Through motor vehicle and pedestrian traffic is prohibited. Vehicle and pedestrian cross flows are permitted.
Class III	A right-of-way is designated by signs or pavement markings. The right-of-way is shared by motor vehicles, bicycles, and pedestrians.

Source: Allan G. Tilton, P.E. 1989

KEY

LOCAL STREETS

COLLECTOR STREETS

ARTERIAL STREETS

BIKEWAYS

CLASS I

CLASS II

CLASS III

PETRIFIED
FOREST RD

TUBBS

GREENWOOD

MORA

GROAT

OAK

MONKEY

LAKE

BERRY

FARWAY

BRANNON

LINCOLN

SILVERADO TRAIL

FOOTHILL

WASHINGTON

DUNAWAL

Source: Allan G. Tilton

BIKEWAY SYSTEM

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ENVIRONMENTAL ASSESSMENT
City of Calistoga

STA inc.

no scale



Exhibit 15



PEDESTRIAN

The majority of the downtown core area of the City contains sidewalks. The majority of the area outside of the downtown core area does not have sidewalks. Pedestrian access throughout the City could reduce the amount of vehicular trips in the City by encouraging the use of pedestrian facilities. The traffic consultant recommends the construction of sidewalks on all residential, collector, and arterial streets.

AIR TRANSPORTATION

The following information was provided by the General Manager of the Calistoga Airport, Erik Striedieck, on November 28, 1989. The Calistoga Airport began operations approximately 40 years ago. The general public is restricted from landing at the airport without prior notification. The number of flights per day vary according to the time of year, weather, and other factors. There is an average of approximately 40 flights per day. On an annual basis approximately 20,000 users frequent the airport. Air traffic to the facility is restricted to single engine aircraft and gliders. Hours of operation are from 9:00 A.M. to sunset. There are no current plans for expansion of the airport facility.

FINDINGS

1. Existing traffic can be improved by implementing traffic improvements listed in this analysis.
2. Prior to circulation improvements, LOS at General Plan buildout will be significantly worse than what is now experienced.
3. Recommended Circulation improvements will improve traffic at General Plan Buildout.
4. The lack of adequate parking in the downtown core results in parking in residential neighborhoods and could discourage potential retail customers.
5. The City will need to establish a comprehensive program to address parking shortfalls in the downtown core area.
6. The City lacks adequate sidewalks for pedestrian activities.



MINERALS

MINERALS

INTRODUCTION

Calistoga's major mineral resource consists of its geothermal reservoir, geysers, and volcanic ash. The Upper Napa Valley-Calistoga area was famous for its thermal springs long before interest in geothermal development began in the Geysers Known Geothermal Resource Area (KGRA). From the early 1860's to well into the 1920's, Calistoga's mineral baths and spas were known internationally, including the Pacheteau Original Hot Springs Inc., and Nances Hot Springs. Guests at an early turn-of-the century spa would not only bathe and steam themselves, but also drink the natural spring waters in hopes of improving their overall health. Tourism today still centers around the mud-bath spa industry (California Energy Commission, October 1986). The City's economy remains dependant upon the mineral water and volcanic ash that supports the bottled water companies and the spas.

GEOHERMAL RESOURCE DEVELOPMENT

The Public Resources Code defines geothermal resources as "the natural heat of the earth, the energy, in whatever form, below the surface of the earth present in, resulting from, or created by, or which may be extracted from, such natural heat, and all minerals in solution or other products obtained from naturally heated fluids, brine, associated gases and steam, in whatever form, found below the surface of the earth ..." (Section 6903; 1986 correspondence, Department of Conservation, Division of Oil and Gas, Kenneth F. Stelling).

The first geysering hot water well at Calistoga was drilled on Sam Brannan's resort which is now called Indian Hot Springs. The well was probably drilled in the late 1860's. By 1924, thirteen geyser wells had been drilled. Many of the hot water wells drilled in Calistoga were flowing or artesian wells. In a 1981 estimate, about 10 wells were openly discharging on the surface. Many artesian wells have been capped ("Geothermal Story of Calistoga," Daily Calistogan, November 13, 1987).

The Calistoga Geothermal Field represents a shallow, moderate temperature resource located at the head of the Napa Valley, within and near the City of Calistoga. The geothermal resource is believed to be associated with a linear fault or fracture system located parallel to the axis of the Napa Valley (California Energy Commission, October 1986).

Volcanic eruptions of the past have left layers of porous volcanic rock inter-layered with sand, gravel, silt, and clay. The layers of fragmented volcanic rock, sand, and gravel are

aquifers. The aquifer acts as a sponge and collects water produced by rain (Memo, CGPAC Geothermal Resource Subcommittee to Planning Commission, December 9, 1985).

The upwelling thermal fluids are easily distinguished from fresh surface water by an indicative chemical signature determined from water analyses of various wells across the valley. The geothermal fluids typically display high concentrations of boron, chloride, and fluoride, and low concentrations of sulfate, iron and bicarbonate. Overlying freshwater aquifers show the opposite trend in the concentration of the same ions (California Energy Commission, October 1986).

Magma (molten rock) in the earth's interior heats the water. The hot water is called geothermal water. If it flows out on the surface, it is a hot spring. Geysers refer to water that spurts out like a fountain. If the water vaporizes into steam, it is a fumarole. Water that is trapped underground in the hot rocks is termed a geothermal reservoir. Geothermal water is a resource that must be renewed each year by rainfall (Susan Hodgson, Division of Oil and Gas 1988).

Geothermal energy can be used to heat buildings, businesses, and for melting snow and ice on streets and sidewalks. Geothermal energy may be useful to agricultural and food production industries including greenhouses, food-drying plants, and fish farms (Susan Hodgson, Division of Oil and Gas 1988). Geothermal water is used for mineral spas and pools at resorts. Volcanic ash, indigenous to the area, is necessary for the mud baths of the spa industry. Bottled mineral water also constitutes a thriving business in Calistoga.

Problems may occur with depletion or overuse of the City's two major mineral resources, volcanic ash and mineral water. Volcanic ash is used for spas' mud baths. Each spa in the City owns property where ash is excavated. In addition, the spas buy ash from other property owners who excavate the resource. There has been heavy use of the ash for the last several years (phone interview, Councilwoman Diane Barrett, November 19, 1989).

The volcanic ash should be reserved exclusively for spa use since it is important to the City's economy. Other commercial exploitation of the ash, such as the production of cosmetics or souvenirs, may result in further rapid depletion. The ash is indigenous to the study area. Once depleted, it cannot be renewed (phone interview, Councilwoman Diane Barrett, November 19, 1989).

A 1986 Geothermal Resource Assessment by the California Energy Commission estimated that Calistoga's mineral water industry was responsible for the withdrawal of more than 55 million gallons of water from the geothermal reservoir. The Assessment concluded that based on current and projected rates of fluid withdrawal by the City, water bottlers and spas, the resource could be expected to have a usable life of 100 years.

Geochemical and hydrologic mapping prepared for the 1986 report suggest that at the present, the geothermal resource exists under near-equilibrium conditions. Some surplus thermal water leaves the Calistoga area naturally indicating that more water is leaving Calistoga than is currently being used.

A potentiometric level refers to the elevation to which water rises in a well that taps a confined aquifer. Potentiometric surface is an imaginary surface, a plane that connects points on a graph plotted to represent the varying levels of wells over time. Some areas in the City are drawing down the potentiometric surface, presumably through excess use (1986 California Energy Commission). The areas affected by this possible cone of depression are located along Washington Street, south of Lincoln. Well monitoring is necessary to verify these conclusions. Currently, the City has funds which have been granted to further assess geothermal resources beyond the 1986 California Energy Commission Report. Additionally, the City through a grant from the California Energy Commission is exploring the creation of a geothermal heating district which would extend between Washington Street and Fairway Street. It would generally serve the downtown core area.

STATE GEOTHERMAL LAWS AND REGULATIONS

All wells in the Calistoga resource area are under the regulation of the State Oil and Gas Supervisor. Section 3714.5 of the California Resource Law states that "the supervisor, pursuant to regulation, shall designate geothermal resource areas and may exclude from the operation of this chapter certain wells within such geothermal resource areas where there is no probability of encountering geothermal resources." According to Kenneth Stelling of the State's Department of Conservation, this means that all wells drilled in Calistoga into the upper fresh water aquifer and no deeper may be excluded from the CDOG regulation (letter to Richard Avery, January 27, 1986; phone interview October 5, 1989).

According to California Attorney General's Opinion, Numbers 76-32, "Counties, and cities may regulate the drilling, operation, maintenance and abandonment of oil, gas and geothermal wells with respect to phases of such activities not covered by state statute or regulation so long as that regulation concerning other phases of such activities." According to Kenneth Stelling, Geothermal District Engineer, the City may prohibit geothermal activity by local zoning restrictions. Currently, wells are conditionally permitted and require discretionary approval. In general, the City may not exercise control over any subsurface activities or well spacing for reservoir management, but may regulate surface activities through such controls as land use regulations, environmental protection, aesthetics, public safety, and fire and noise prevention.

FINDINGS

1. Calistoga's geothermal resource has an expected life of 100 years. The City's economy is dependent on the geothermal resource for the bottled water and spa industries.
2. Further analysis of the resource are necessary to more accurately determine the rate of fluid depletion and to suggest methods of increasing reservoir longevity. Geothermal activities need to be monitored and managed to prevent over-rapid depletion.
3. Volcanic ash is indigenous to the study area and is necessary to the mud baths of the spas. Its use should be protected for spa use exclusively since it is nonrenewable.
4. The City may only regulate surface activities related to geothermal activities.



SOILS/AGRICULTURE

SOILS/AGRICULTURE

INTRODUCTION

Valuable resources to the County of Napa are its soils and the agriculture supported by the various soils. The County has identified areas of agricultural preserves in order to protect the County's economy which is largely based on vineyards. In order to further protect farmland, the County has encouraged urban development to take place within incorporated and developed areas. The types of soils may also affect the type of urban development which can take place.

SOILS

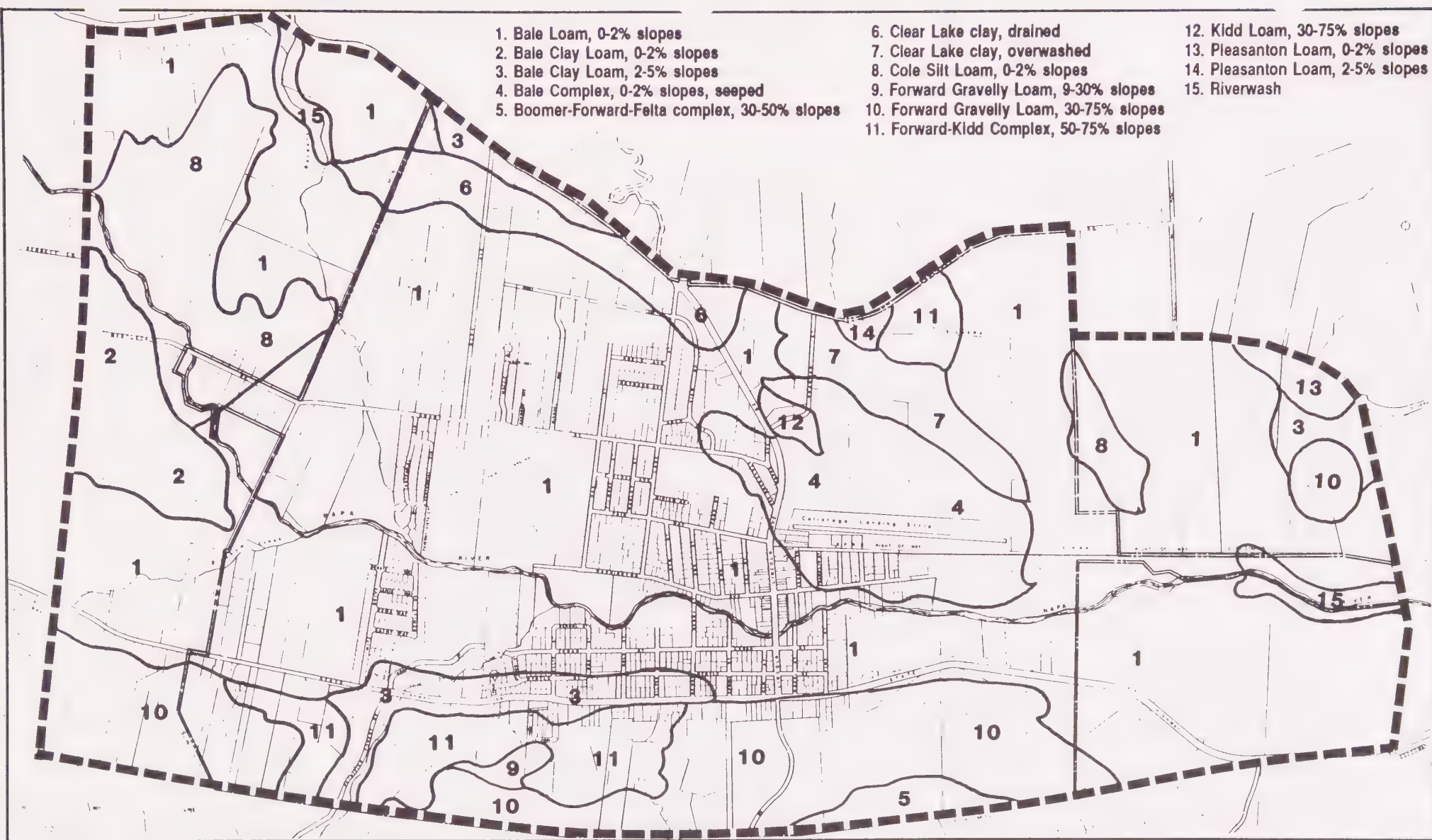
The soils found within and around the City of Calistoga range from Bale loam to the Forward-Kidd complex. The most prevalent soil type is Bale loam. Information on the soils of Calistoga are contained in an August 1978 publication prepared by the U.S. Department of Agriculture, Soil Conservation Service. A soils map appears on Exhibit 16. Each of the soils is described below. The number in bold refers to the legend in Exhibit 16. The map symbol numbers come from the U.S. Department of Agriculture, Soil Conservation Service, August 1978.

- | | | |
|---|----------------|--|
| 1 | Map symbol 103 | Bale loam, 0 to 2 percent slopes. This nearly level soil is on alluvial fans and flood plains. Areas of Bale soils near Calistoga have a surface layer of gravelly loam. Runoff is slow, and the hazard of erosion is slight. The water table is at a depth of more than 4 feet. The soil is mainly used for vineyards. A few small areas that have not been drained are in pasture. |
| 2 | Map symbol 104 | Bale clay loam, 0 to 2 percent slopes. This nearly level soil is on alluvial fans and flood plains. It has a profile similar to the one described as representative for the series, but the surface layer is clay loam. Runoff is slow, and the hazard of erosion is slight. The water table is at a depth of more than 4 feet. This soil is used mainly for vineyards. |
| 3 | Map symbol 105 | Bale clay loam, 2 to 5 percent slopes. This gently sloping soil is on flood plains and low terraces. The surface layer is clay loam. Runoff is slow, and the hazard of erosion is slight. The water table is at a depth of more than 4 feet. Nearly all the acreage of this soil is used for vineyards. |

1. Bale Loam, 0-2% slopes
2. Bale Clay Loam, 0-2% slopes
3. Bale Clay Loam, 2-5% slopes
4. Bale Complex, 0-2% slopes, seeped
5. Boomer-Forward-Felta complex, 30-50% slopes

6. Clear Lake clay, drained
7. Clear Lake clay, overwashed
8. Cole Silt Loam, 0-2% slopes
9. Forward Gravelly Loam, 9-30% slopes
10. Forward Gravelly Loam, 30-75% slopes
11. Forward-Kidd Complex, 50-75% slopes

12. Kidd Loam, 30-75% slopes
13. Pleasanton Loam, 0-2% slopes
14. Pleasanton Loam, 2-5% slopes
15. Riverwash



Source: United States Department of Agriculture



SOILS MAP

MASTER ENVIRONMENTAL ASSESSMENT
City of Calistoga

STA inc.
no scale



Exhibit 16

- 4 Map symbol 106 Bale complex, 0 to 2 percent slopes, seeped. This complex consists of nearly level, stratified loam, clay loam and gravelly loam. Included with these soils in mapping were areas of slowly permeable soils that are stratified with clay. Permeability is moderate and runoff is slow. There is little or no hazard of erosion. The water table is at a depth of 2 to 4 feet. Reaction is neutral to moderately alkaline. Boron toxicity is strong. These soils are not suited to cultivation because of the excessive boron content. Most areas are in saltgrass and star thistle.
- 5 Map symbol 111 Boomer-Forward-Felta complex, 30 to 50 percent slopes. The steep soils of this complex are on uplands. The soils are so intermingled that it was not practical to separate them at the scale used in mapping. The Felta soils commonly occur on south-facing side slopes. This complex is about 45 percent Boomer soils, 35 percent Forward soils, and 15 percent Felta soils. The remaining 5 percent is small areas of dark red soils near Spring Mountain Road and Petrified Forest Road and areas of gray clayey soils that have gentler slopes. Runoff is rapid. The hazard of erosion is slight on the boomer soils and severe on the Forward and Felta soils. The soils in this complex are used for timber, wildlife habitat, and watershed.
- 6 Map symbol 116 Clear Lake clay, drained. This nearly level soil is on old alluvial fans and in basins. It has the profile described as representative of the series. Included with this soil in mapping were areas of Bale, Haire, Cole, Reyes, Tehama, and Yolo soils and areas of soils that have slopes of 2 to 5 percent on basin rims and in narrow drainageways in the southern part of the county. Also included were areas of very dark grayish brown clayey soils near Green Island, small areas of lime-free clay in the northern part of Napa Valley, and a few areas of soils that have a water table at a depth of 5 feet or less. Runoff is slow or very slow. There is little or no hazard of erosion. The upper few inches of this soil commonly becomes strongly granular upon drying. This soil is mainly used for pasture. Some areas in the northern part of Napa Valley are used for vineyards.
- 7 Map symbol 117 Clear Lake clay, overwashed. This nearly level soil has an overwash of grayish brown fine sandy loam 12 to 18 inches thick that overlies the clay surface layer. This soil is subject to annual and periodic flooding and subsequent removal and

deposition of coarse textured surface material. The water table is between depths of 3 and 6 feet during winter. The soil is mainly used for irrigated pasture, but much of the acreage is being converted to vineyards.

- 8 Map symbol 118 Cole silt loam, 0 to 2 percent slopes. This nearly level soil is in large areas on old alluvial fans and flood plains. It has the profile described as representative for the series. Included with this soil in mapping were small areas of Bale, Clear Lake, Cortina, and Yolo soils. Also included were areas of soils that are similar to this Cole soil except that the subsoil is calcareous. Runoff is very slow. There is little or no hazard of erosion. The water table is at a depth of 3 to 5 feet in places late in winter and early in spring in years that have heavy rainfall. This soil is used for vineyards, prune orchards, and irrigated pasture, but the orchards and pastures are being converted to vineyards.
- 9 Map symbol 139 Forward gravelly loam, 9 to 30 percent slopes. This strongly sloping to moderately steep soil is on side slopes on uplands. Included with this soil in mapping were small areas of Aiken, Boomer, Kidd, and Sobrante soils. Also included were areas of soils that are similar to this Forward soil but that have a clay loam subsoil and that are less than 20 inches deep to bedrock. Runoff is medium. The hazard of erosion is slight to moderate. This soil is used for limited timber production, wildlife habitat, and watershed.
- 10 Map symbol 140 Forward gravelly loam, 30 to 75 percent slopes. This steep and very steep soil is on uplands. Runoff is very rapid. The hazard of erosion is high to very high. The soil is used for timber, recreation, wildlife habitat, and watershed.
- 11 Map symbol 141 Forward-Kidd complex, 50 to 75 percent slopes. This complex consists of very steep soils on uplands. Runoff is rapid and the hazard of erosion is high in the less sloping areas. Runoff is very rapid and the hazard of erosion is very high in the more sloping areas. The soils in this complex are used for limited timber production, wildlife habitat, and watershed.
- 12 Map symbol 156 Kidd loam, 30 to 75 percent slopes. This steep to very steep soil is on uplands. It has the profile described as representative for the series. Runoff is rapid and very rapid. The hazard of

erosion is high to very high. The soil is used for wildlife habitat, recreation, and watershed.

- | | | |
|----|----------------|---|
| 13 | Map symbol 170 | Pleasanton loam, 0 to 2 percent slopes. This nearly level soil is on alluvial fans and flood plains. It has the profile described as representative for the series. Included with this soil in mapping were small areas of Cole, Cortina, and Yolo soils and small areas of soils that have a clayey subsoil. Runoff is slow. The hazard of erosion is slight. This soil is used mainly for pasture and prunes, but the acreage is being planted to vineyards. |
| 14 | Map symbol 171 | Pleasanton loam, 2 to 5 percent slopes. This gently sloping soil is on alluvial fans. Runoff is slow. The hazard of erosion is slight. This soil is used for vineyards in the Napa Valley. |
| 15 | Map symbol 174 | Riverwash. These miscellaneous areas are in active stream channels, on flood plains, and adjacent to drainageways. Slope is 0 to 5 percent. Elevation is 200 to 1,500 feet. The areas are inundated during periods of waterflow and are subject to constant deposition and removal of material. Vegetation consists of occasional willows, water grasses, and some brush. Riverwash consists of erratically stratified layers of water-deposited sand, gravel, stones, and cobbles. Layers of sandy loam and silt loam are deposited for short periods but are subject to intermittent scouring and removal. Thickness of the strata ranges from 2 to 30 inches. Reaction is neutral or mildly alkaline. The organic matter content varies from stratum to stratum but is commonly low. Included with Riverwash in mapping were small areas of Cortina soils. Runoff is slow. The hazard of erosion is slight to very severe, depending on water velocity. Riverwash is used as a source of sand and gravel. It is almost devoid of vegetation and has no agricultural use. |

Each of the soils has properties which may affect any development of the site that contains the soil. Table KK summarizes the characteristics of the soils for developments. A slight limitation indicates that soil properties are favorable for the specified use; any limitation is minor and easily overcome. A moderate limitation indicates that soil properties and site

TABLE KK

BUILDING AND SITE DEVELOPMENT - SOIL PROPERTIES

Map Symbol	Shallow Excavations	Dwellings w/o Basemt	Dwellings w/Basemt	Small Commercial Buildings	Local Roads and Streets
1	Moderate wetness floods	Severe floods	Severe floods	Severe floods	Moderate low strength
2	Same	Same	Same	Same	Severe low strength
3	Same	Same	Same	Same	Severe low strength
4					
loam	Severe wetness	Severe floods	Severe wetness floods	Severe floods	Moderate wetness low strength
clay loam	Same	Same	Same	Same	Severe low strength
5					
Boomer					
part	Severe slope	Severe slope	Severe slope	Severe slope	Severe slope low strength
Forward					
part	Severe slope depth to rock	Severe slope	Severe slope depth to rock	Severe slope	Severe slope

TABLE KK (Cont.)

BUILDING AND SITE DEVELOPMENT - SOIL PROPERTIES

Map Symbol	Shallow Excavations	Dwellings w/o Basemt	Dwellings w/Basemt	Small Commercial Buildings	Local Roads and Streets
Felta					
Part	Severe slope small stones	Severe slope	Severe slope	Severe slope	Severe slope
6	Severe too clayey	Severe shrink-swell low strength	Severe shrink-swell low strength	Severe shrink-swell low strength	Severe shrink-swell low strength
7	Severe floods wetness too clayey	Severe floods shrink-swell low strength	Severe floods wetness shrink-swell	Severe floods shrink-swell low strength	Severe wetness floods shrink-swell
8	Severe wetness	Severe shrink-swell	Severe shrink-swell	Severe shrink-swell	Severe low strength shrink-swell
9	Severe slope depth to rock	Severe slope	Severe slope depth to rock	Severe slope	Severe slope
10	Same	Same	Same	Same	Same
11					
Forward					
part	Same	Same	Same	Same	Same
Continued					

TABLE KK (Cont.)

BUILDING AND SITE DEVELOPMENT - SOIL PROPERTIES

Map Symbol	Shallow Excavations	Dwellings w/o Basemt	Dwellings w/Basemt	Small Commercial Buildings	Local Roads and Streets
Kidd part	Same	Severe slope depth to rock	Same	Severe slope depth to rock	Severe slope depth to rock
12	Same	Same	Same	Same	Same
13	Moderate too clayey	Moderate low strength shrink-swell	Moderate low strength shrink-swell	Moderate low strength shrink-swell	Severe low strength
14	Same	Same	Same	Same	Same
15	N/A	N/A	N/A	N/A	N/A

Source: U.S. Department of Agriculture, Soil Conservation Service 1978

Notes: Same = See Above

N/A = Not Applicable

features are unfavorable for the specified use, but the limitations can be overcome or minimized by special planning and design. A severe limitation indicates one or more soil properties or site features are so unfavorable or difficult to overcome that a major increase in construction effort, special design or intensive maintenance is required. For some soils rated severe, such costly measures may not be feasible (U.S. Department of Agriculture, Soil Conservation Service, 1978).

Many soils have characteristics which may increase the level of effort to develop the properties. Soils studies may be necessary in some cases according to the individual characteristics of the sites.

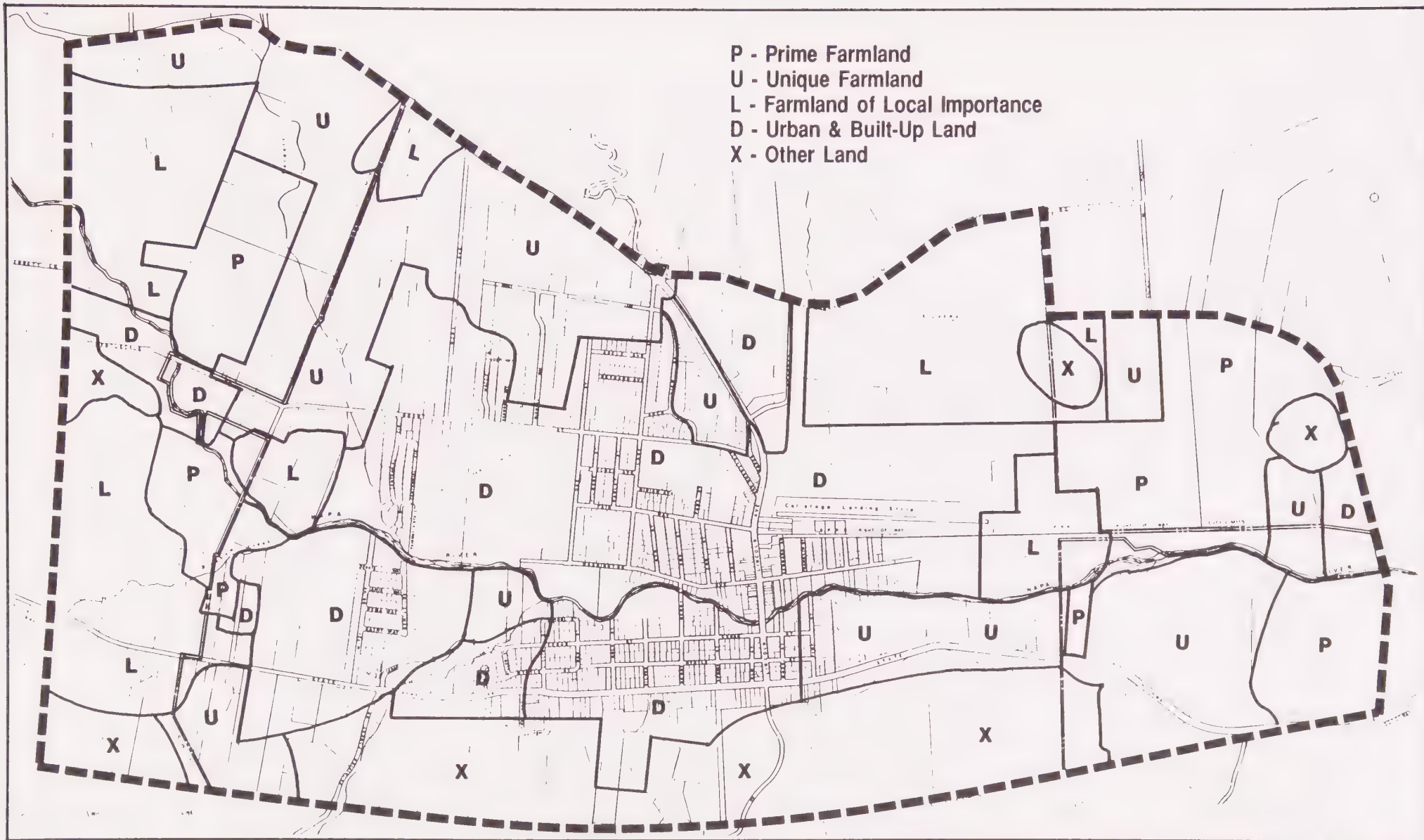
AGRICULTURE

Agriculture, especially the cultivation of vineyards is a major activity in Napa County. The County's growth management system encourages urban growth within incorporated and urban areas while maintaining agricultural preserves in areas surrounding jurisdictions: "the County will plan for and accommodate the distribution of population among the subareas of the County, giving preference to the existing incorporated and urban areas" (Napa County General Plan, 1984). Accordingly, the City of Calistoga has not defined areas within the City for exclusive agricultural use. The 1977 Calistoga General Plan allowed light agricultural uses such as vineyards in rural residential areas. One dwelling unit was allowed on these properties.

Currently, approximately 66 acres are under agricultural cultivation. Vineyards, organic crops, truck crops, and some orchards are the main types of agriculture within the City. There are no Williamson Act lands within the City limits. Several properties adjacent to the City are within the County's agricultural preserve and are subject to Williamson Act contracts.

Per the Farmland Mapping and Monitoring Program, the State Office of Land Conservation monitors the conversion of the state's agricultural lands to and from agricultural use. According to the 1984 Advisory Guidelines, the maps "are intended to provide information only and do not constitute a state prescription for local land use decisions." The maps classify farmlands based on soil types and current land use (correspondence, Emily Kishi to STA Planning, Inc., October 6, 1989). Exhibit 17 shows the 1986 Important Farmland Map classifications for the City of Calistoga. A revised map will be available in the Summer of 1990 from the State Office of Land Conservation.

The Farmland Mapping and Monitoring Program Advisory Guidelines define prime farmland (P - map symbol) as land which has the best combination of physical and chemical characteristics for the production of crops. Prime farmland must have been



Source: Napa County Important Farmland Map, July 1986



IMPORTANT FARMLANDS MAP

MASTER ENVIRONMENTAL ASSESSMENT

City of Calistoga

STA inc.
 no scale



Exhibit 17

used for the production of irrigated crops within the last three years (Section 201). Mapping units in the study area which meet the criteria for prime farmland are listed below.

<u>Symbol</u>	<u>Mapping Unit</u>
103	Bale loam, 0 to 2 percent slopes
104	Bale clay loam, 0 to 2 percent slopes
105	Bale clay loam, 2 to 5 percent slopes
116	Clear Lake Clay, drained
117	Clear Lake clay, overwashed
118	Cole silt loam, 0 to 2 percent slopes
170	Pleasanton loam, 0 to 2 percent slopes
171	Pleasanton loam, 2 to 5 percent slopes

Farmland of Statewide importance is land which has a good combination of physical and chemical characteristics for the production of crops. It must have been used for the production of irrigated crops within the last three years (Section 202). No areas within and adjacent to the study areas have been designated as Farmland of Statewide importance.

Unique Farmland (U - Map Symbol) is land that is used for the production of specific high economic value crops. Examples of such crops may include oranges, olives, avocados, rice, grapes, and cut flowers (Section 203). A portion of property designated as Unique Farmland has been developed since the 1986 survey.

Farmland of Local Importance (L - Map Symbol) is either currently producing crops, or has the capability of production. The land may be important to the local economy due to its productivity. One small area designated as Farmland of Local Importance has been developed since 1986.

Grazing Land is land on which the existing vegetation is suited to the grazing of livestock. No areas within the study area have been classified as Grazing Land.

Urban and built up land (D - map symbol) is land that is used for residential, industrial, commercial, construction, institutional, public administrative purposes, railroad yards, cemeteries, airports, golf courses, sanitary landfills, sewage treatment plants, water control structures, and other development purposes. The minimum mapping unit is 10 acres. The building density must be at least one structure per 1.5 acres or approximately 6 structures per 10 acres (Section 206). Urban and built up land represents a major area of the City's incorporated limits.

Finally, land which does not meet the criteria of any other category is defined as Other Land (X - map symbol) on the map (Section 207). A majority of this property is located to the west and east of the study area. Uses which may occur in these areas include rural development, marginal agricultural lands, and brush and timber lands.

FINDINGS

1. Many soils in the Study Area have characteristics which may present challenges to certain developments. Sites proposed for development may have unique characteristics which should be studied carefully as circumstances warrant.
2. The Study Area contains different grades of farmland including Prime Farmland. Development has taken place on areas previously characterized as Unique Farmland and Farmland of Local Importance. The City will continue to allow development within its incorporated limits in support of the County agricultural preserve and zoning.
3. Approximately 66 acres of agricultural land are located within the City limits.



BIOLOGICAL RESOURCES

BIOLOGICAL RESOURCES

INTRODUCTION

The biological resources section of the MEA provides base data to be used for the identification and management of biological resources currently identified in Calistoga. As additional information is generated through subsequent detailed surveys, the findings of this study should be refined and updated.

VEGETATION

There are four major vegetation communities found within Napa County. Marshes are found along the shore of San Francisco and San Pablo Bays, and inland where saline or freshwater saturated soil are prevalent. Grasslands are found on the valley floors and hillsides, up to 4,000 feet, and are located in the southern portion of the county. The foothill woodland community is made up of oak and digger-pine trees and is located in numerous places throughout the county, including the mountainous eastern and western boundaries of the County. The last vegetation community found in Napa County consists of chaparral vegetation, which can be found throughout the County. Chaparral vegetation grows in areas where the soils are rocky and where average rainfall ranges from 14 to 25 inches per year. The mountain slopes on both sides of the valley are dominated by coniferous trees with some chaparral in the drier areas. (Cal Poly San Luis Obispo, Information Profile Fall 1987)

Most of the original native plants to Calistoga and the Napa Valley have been eliminated over time due to increased agricultural uses. Grassland and oakland (deciduous woodland) were the prevalent vegetation in the area, but have been converted into vineyards, orchards, and pastures. Of the woodland that remains, Live Oak and Valley Oak are the two most common species in the Calistoga area. The grasses that are present in Calistoga and the surrounding Napa Valley are primarily of European origin. The European strains eventually replaced the native Wild Oat and Italian Ryegrass after their introduction to the area by white settlers. The riparian communities and woodlands along the creekways in Calistoga, and along the Napa River, are essentially the only principal natural habitat remaining. (Cal Poly San Luis Obispo, Information Profile Fall 1987)

Following is a list of some of the more common plant species in the Napa Valley and Calistoga area (common names):

Hedge Mustard, Mustard, Thistle, Miniature Lupine, Poison Hemlock, Yarrow, Sage, Pacific Willow, Indian pant Brush, Bush Morning-glory, Blackberry, California Mugwort, Coyote Brush, Douglas Fir, Ponderosa Pine, Mint, Maidenhair Fern, Cotton Easter, Blue Brush, Slender-Tubed Iris, English Elm, Eucalyptus, Nightshade Nettle, California Poppy,

Poison Oak, Elegant Clarkia, Foxtail, Sweet Fennel, Bush Monkey Flower, Red Alder, Moth Mullen, California Live Oak, California Buckeye, Common Scouring Rush, Fremont Cottonwood, Marsh Skullcap, California Sycamore, Wild Oat, Ryegrass Coast Redwood, Madrone, Digger Pine, Bamboo, Cattails, and Duckweed. (Cal Poly San Luis Obispo, Information Profile, Fall 1987)

At one time Calistoga and the Napa Valley were abundant in woodlands. Due to the extensive harvesting of timber in the past, both Calistoga and the Napa Valley suffer from a lack of timber. There are several areas in the Napa Valley which are completely devoid of timber, including portions of Calistoga. In the areas where there are woodlands (Douglas fir), these areas are poorly stocked. No timber harvest occurs within the Calistoga study area. Where Napa Valley was once an active timber operator, the County now produces less than one percent of California's timber. In order to combat the loss of woodlands in the area and to prevent further damage of poorly stocked woodlands, Calistoga has adopted a tree preservation ordinance. This ordinance requires that a person wishing to fell a tree with a circumference larger than 40 inches, must acquire a permit from the City. A permit will be issued only if there are health and safety reasons or if it is absolutely necessary for the development of a parcel. (Cal Poly San Luis Obispo, Informational Profile, Fall 1987)

Mt. Washington is thickly covered by woodland species typical of the hills surrounding the upper Napa Valley, including tree/shrub species. Table LL depicts native plants observed at Mt. Washington on March 10, 1987 by Joe Callizo of the California Native Plant Society. The density of the vegetation forms a nearly closed canopy in some parts of the hill, and there is not much evidence of replacement of older trees, though the mature trees appear healthy. Plant species observed in the field/ pasture at the base of Mt. Washington include: brass buttons, water cress, meadow foam, callitriche, vernal buttercup, and valley oak.

Mt. Lincoln is covered by woodland species typical of the hills surrounding the upper Napa Valley, including a mix of live oaks, laurel madrone, and Douglas fir.

Though not considered endangered, any remaining areas with native vegetation should be preserved since these areas are undergoing rapid replacement or disturbance. Prior to grading, native habitats should be studied by a botanist. (phone interview, Allan Buckmann, Department of Fish and Game, November 30, 1989)

The City of Calistoga has a number of valuable resource areas and habitats within its study area which should be addressed by the General Plan. According to the recommendations of the Department of Fish and Game, natural resources of ecological and scenic value which should be protected through the General Plan include all wetlands, the marshland near the geyser, all waterways, and small artificial wetlands on major spa properties which contain rare, threatened, or endangered species (correspondence, Brian

TABLE LL
MT. WASHINGTON VEGETATION LIST

Common Name	Species
Valley Oak	<u>Quercus lobata</u>
Coast Live Oak	<u>Quercus agrifolia</u>
Madrone	<u>Arbutus menzeisii</u>
Kellog Oak	<u>Quercus kelloggi</u>
Digger Pine	<u>Pinus sabiniana</u>
Ponderosa Pine	<u>Pinus ponderosa</u>
Douglas Fir	<u>Pseudotsuga menzeisii</u>
Oak-loving Mistletoe	<u>Phoradendron villosum</u>
Woodland Manzanita	<u>Arctostaphylos manzanitae</u>
Blue Elderberry	<u>Sambucus cerulea</u>
Poison Oak	<u>Toxicodendron diversilobum</u>
Bush Monkey Flower	<u>Mimulus aurantiacus</u>
Coyote Brush	<u>Bacharis pilularis consanguinea</u>
Toyon	<u>Heteromeles arbutifolia</u>
Woodland Honeysuckle	<u>Lonicera hispidula vacilans</u>
Indian Soap	<u>Chorogallum pomeridianum</u>
Hound's Tongue	<u>Cynoglossum grande</u>
Hairless Mule Ears	<u>Wyethia glabra</u>
Gamble Weed	<u>Sanicula crassicaulis</u>
Indian Warrior	<u>Pedicularis densiflora</u>
Shooting Star	<u>Dodecatheon hendersonii</u>
Wood Rush	<u>Luzula comosa</u>
California Buttercup	<u>Ranunculus californicus</u>
Common Cleavers	<u>Galium aparine</u>
Hillside Pea	<u>Lathyrus sp.</u>
Collinsia	<u>Collinsia sp</u>
Phacelia	<u>Phacelia sp.</u>

Source: California Native Plant Society, March 10, 1987

Hunter, Department of Fish and Game, to Richard Spitler, June 6, 1989). Consideration should also be given to placing riparian vegetation corridors and lineal parks in the wetland sinks located in floodway areas near Mt. Washington (phone interview, Allan Buckmann, Department of Fish and Game, November 30, 1989).

WILDLIFE

Following is a list of some of the more common bird and mammal species found in the Napa Valley and Calistoga area (Cal Poly San Luis Obispo, Informational Profile, 1987):

Birds: Robin, Red-Tailed Hawk, California Quail, Morning Dove, Allen's Hummingbird, Barn Swallow, Cliff Swallow, Scrub Jay, Chickadee, Wren, Newick's Wren, Mocking Bird, Swainson's Thrush, Hutton's Vireo, Wilson's Warbler, Goldfinch, Brown Towhee, White-Crowned Sparrow, Red Winged Blackbird, Sparrow Hawk, Chicken Hawk, Great Horned Owl, Red-Shafed Flicker, California Thrasher, Blue-Gray Gnatcatcher, Ruby-Crowned Kinglet, Shrike, Orange-Crowned Warbler, Oregon Junco, Golden-Crowned Sparrow, Rox Sparrow, Western Grey, Rock Dove, House Sparrow, Willet, and Killdeer.

Other Mammals: Vagrant Shrew, Trowbridge Shrew, Broad-handed Mole, Coast Mole, Pocket Gopher, Great Basin Pocket Mouse, Santa Cruz Kangaroo Rat, Brush Mouse, California mouse, pinyon Mouse, Deer Mouse, Dusky-footed Wood Rat, California Meadow Mouse, Long-Tailed Weasel, Raccoon, Striped Skunk, Bobcat, Opossum, Coyote, Black-Tailed Deer, Black-Tailed Hare, Eastern Cottontail Rabbit, and Muskrat.

The optimum concentration of wildlife occurs in areas where there is a high degree of diversity in the types of habitat available to the wildlife such as the riparian corridors and the hillside woodlands. A suitable habitat should include an adequate ground cover to increase the wildlife population. In a given area, the best method is to increase the quantity and quality of suitable habitat. Policies preserving plant communities and water quality would create greater opportunities for wildlife populations to co-exist with man (1977 Calistoga General Plan).

THREATENED AND ENDANGERED SPECIES

The peregrine falcon (Falco pergurus anatum), is listed as "endangered" by both federal and state agencies. The peregrine falcon hunts down out of canyons in the Napa Valley to waterways in the Calistoga area as well as in other portions of the Napa Valley (phone interview, Allan Buckmann, Department of Fish and Game, November 30, 1989). The prairie falcon (Falco Mexicanus), listed as "endangered" by the state species are occasionally spotted in the vicinity between Napa River and Garnett Creek (Arroyo Acres Subdivision EIR, June 1985). The California Clapper Rail and Peregrine Falcon are rare and endangered species in the Napa Valley. These birds are found in vegetation bordering

tidal marsh areas with good cover, or in rock outcroppings near water (Cal Poly San Luis Obispo, Informational Profile, Fall 1987).

The California Native Plant Society (CNPS), Napa County Land Trust, and the Department of Fish and Game have indicated that two rare plants are known to be present in the MEA study area. These plants are the Calistoga popcorn flower (Plagiobothrys strictus), and the Napa bluegrass (Poa napensis). Plants are generally rare for one of two reasons: 1) they are naturally limited to a particular locality or habitat; or 2) their locality or habitat is becoming limited due to man's activities (PG & E 1985).

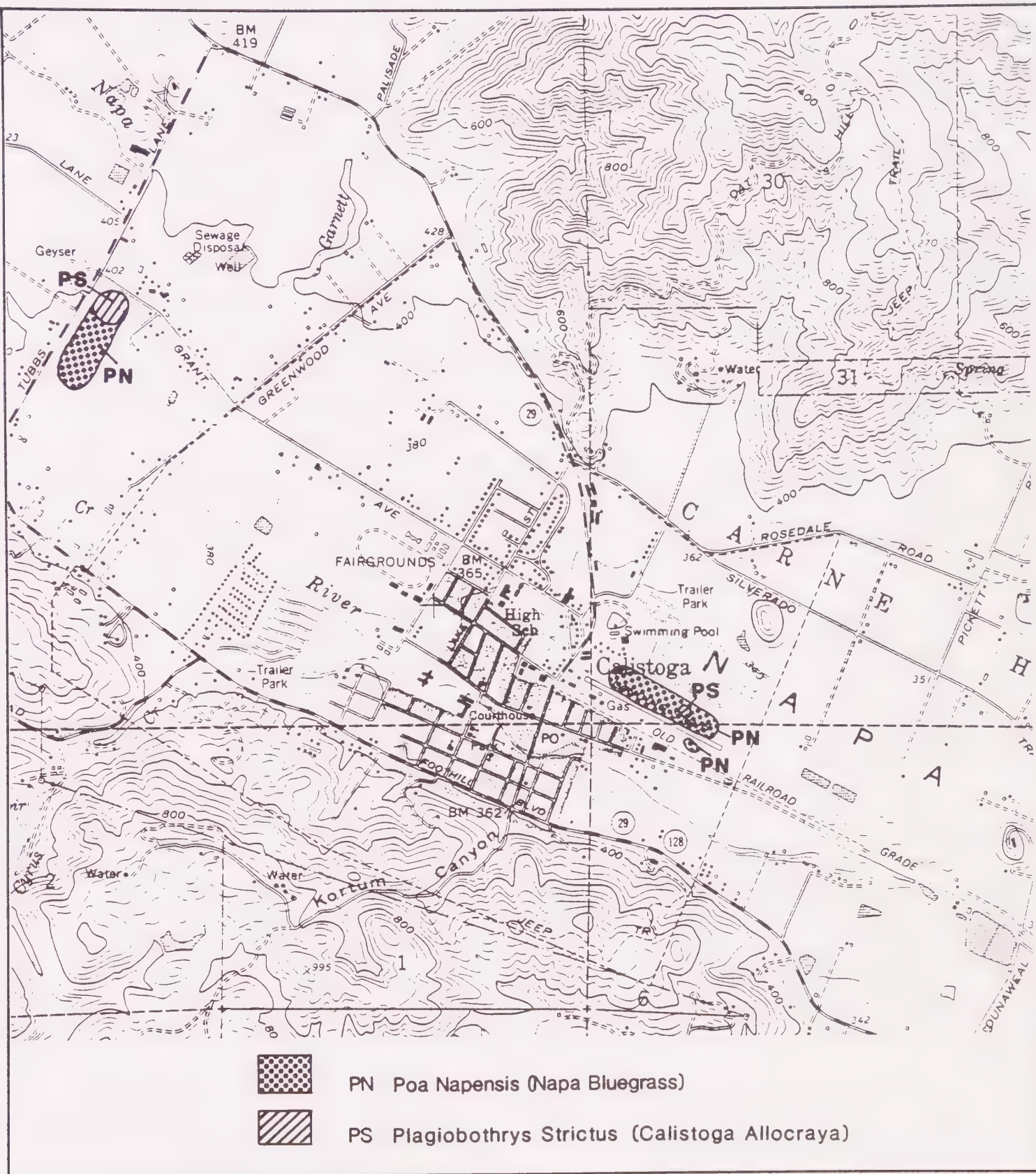
Napa bluegrass is listed as endangered, and the Calistoga popcorn flower is a candidate species for listing as endangered by the California Department of Fish and Game. Both species have been placed on the 1B list by the California Native Plant Society. List 1B consists of plants that are rare or endangered in California or elsewhere. Both species are listed as Category 2 by the U.S. Fish and Wildlife Service. Category 2 indicates species under review by the United State Fish and Wildlife Service for which their current information indicates probable appropriateness of listing as endangered or threatened, but for which sufficient information is not presently available.

Both species of concern are associated with hot springs and wetlands, including the geyser area, and grow primarily in clay loam soil. The two species are often sighted growing in together in the same area. According to the Department of Fish and Game's Natural Diversity Database, they were last observed in 1986 in the Calistoga area. P. napensis was observed in the Myrtledale hot springs area on both sides of Grant Avenue two miles north of Calistoga and P. strictus was sighted at Calistoga geysers northwest of Calistoga.

The CNPS annually conducts field surveys for rare plant species. Napa bluegrass and the Calistoga popcorn flower have been located within the City limits near the Calistoga Soaring Center landing strip and within the MEA study area near Tubbs Lane and Grant Avenue (phone interview, Joe Callizo, CNPS, October 6, 1989). Please refer to Exhibit 18 which shows the locations of the species.

Other species from the CNPS's watch list are known to grow in the Calistoga area. These include Brewer's milkvetch (Astragalus breweri), Calistoga buckrush (Ceanothus divergens), and the Chaparral lily (Lilium rubescens). Brewer's Milkvetch has been found near Tubbs Lane and Grant Avenue within the MEA study area. The other two species have been located outside of the MEA study area. The CNPS does not advocate protection of these plants, but continually surveys for the plants to assess their populations.

Over several years, PG & E conducted an analysis of rare plants in the Geysers-Calistoga Known Geothermal Resource Area (KGRA) which is located in portions of Sonoma, Lake,



Source: California Native Plant Society



RARE PLANT LOCATIONS **MASTER ENVIRONMENTAL ASSESSMENT** City of Calistoga

STA inc.



Exhibit 18

Napa and Mendocino Counties. The purpose of the study was to determine the impact of geothermal development on specific rare plants. The study area included the region in and within five miles of the Geysers KGRA. The City of Calistoga was included within the study area. The final report was issued on September 3, 1985.

The PG & E report surveyed twenty-one rare plants including the Napa bluegrass and *Calistoga allocarya* (popcorn flower). In the PG & E study area, the various rare plants occur most frequently in three vegetation habitat types: vernal pools, serpentine chaparral, and serpentine barrens. Vernal pools are shallow depressions that fill with water in winter and slowly dry in the spring. Serpentine chaparral is a sparse assemblage of shrubs on serpentine soils, and serpentine barrens are nearly devoid of vegetation and occur on serpentine bedrock. These three habitats are limited in distribution in the study area.

Development itself results in habitat loss if construction occurs on the species site. Geothermal development has operational effects that impact vegetation. The impacts result from: 1) chemical compounds emitted with the steam, primarily through the cooling tower; and 2) changes in atmospheric humidity due to cooling tower drift. The product Boron, that is in the steam, is considered the main source of damage.

The PG & E study noted that, within their study area, eight rare plants occur that are found nowhere else in California. They are: The Geysers panicum, Lake County dwarf flax, few-flowered navarretia, many-flowered navarretia, Lake County stonecrop, *Calistoga allocarya* (popcorn flower), Napa bluegrass, and *Socrates Mine* jewelflower. Of these eight restricted plants, only few-flowered navarretia and many-flowered navarretia have a portion of their population protected at The Nature Conservancy's Boggs Lake Preserve. The remaining six rare plants have the greatest potential of extirpation.

FINDINGS

1. Geothermal activities and development may impact rare plants including Napa bluegrass and the *Calistoga* popcorn flower. Due to the presence of endangered species, all work associated with wetlands should be required to complete botanical surveys and obtain environmental review prior to any modifications. Local spas should be encouraged to increase such habitat areas for their intrinsic value (correspondence, Brian Hunter, Department of Fish and Game, to Richard Spitler, June 6, 1989).
2. All waterways should be managed as coherent ecological systems. All undeveloped waterways should be buffered to prevent development and encroachment. For minor tributaries, a minimum of 30-foot setbacks should be required from the top of the high bank. For the Napa River, a minimum setback of 50 feet should be limited to access for maintenance. They should not have cross fences or be used for alternative purposes, including livestock grazing, lawn clippings or trash disposal.

Waterway zones also represent open space areas where native trees and shrub species, such as the valley oak, can be conserved and provide parkland, community separators, and other natural amenities (correspondence, Brian Hunter, Department of Fish and Game, to Richard Spitler, June 6, 1989).

3. Prior to grading, native habitats should be studied by a botanist.
4. Consideration should be given to placing riparian vegetation corridors and lineal parks in the wetland sinks located in floodway areas near Mt. Washington.



AIR QUALITY

AIR QUALITY

INTRODUCTION

The City of Calistoga is regionally located in Napa Valley in the northern portion of the Bay Area Air Quality Management District (BAAQMD). Napa Valley is influenced by Bay Area weather patterns on a regional scale, and the valley meteorological conditions on a local scale. The following air quality information was provided in the March 1989 assessment completed for the Outdoor Resorts EIR. Additional sources of information include BAAQMD meteorology and air quality data.

METEOROLOGY/CLIMATE

The location of a Pacific high pressure cell controls the regional weather patterns. When in its summer position just off the coast of California, hot, dry winds circulate in the valley due to the isolation of the area from weak low pressure cells. With the heating of the valley during the long summer days, high temperatures often exceed 100 F. Since marine air and cooling coastal fogs, which regulate the lower Bay Area climate, cannot penetrate the nearby coastal range, the intense heating of the valley floor produces a thermal trough or low pressure area. This condition pulls cooler air from the coastal high pressure area over the range and up the valley from the Bay.

Another local weather cycle has a more detrimental effect on air quality. During the winter, the Pacific high typically moves Southwest of its normal position allowing low pressure winter storms into the Bay Area. Typical temperatures range between 30 and 70 F, but can drop as low as 22 F. During the winter and spring, the majority of the average 38 to 40 inches of rainfall per year is dropped in the valley. As in the nearby Central Valley, radiation fogs develop when the warm moist air masses cool through contact with the earth's cold surface at night. In the spring and early summer, these fogs usually dissipate by midday but often temperature inversions develop in the Valley during the night. These inversions trap Bay Area pollutants at low levels. Without the cleaning effect of winter and early spring rains, impaired air quality in the valley can result. However, winter air flow patterns also bring San Pablo Bay and Santa Rosa pollution over the hills with coastal winds that blow north up the coast. Since inversions can occur, efforts to regulate and prohibit polluting uses should be encouraged.

AIR POLLUTION METEOROLOGY

Air Quality varies widely over the Bay Area due to the spatial distribution of pollution sources and the different microclimates existing in the area. Inland areas and those containing large central business districts have historically reflected occasional high levels of photochemical oxidants or "smog" (including ozone), carbon monoxide (CO), and total

suspended particulates (TSP). Oxidant levels have declined in the Bay Area over the past ten years. From 1985 to 1986, the number of exceedances of the federal 0.12 ppm one-hour standard dropped from nine to five days. Santa Clara County has experienced most of these exceedances due to Bay Area summer meteorological conditions. Closer to Calistoga, the Napa monitoring station has not recorded a violation since 1978 when the 0.12 ppm recorded was a violation. (At this time the federal standard was a more stringent 0.08 ppm.)

The Santa Rosa station has never recorded an exceedance. The data collected at these nearby recording stations is presented in Table MM. For ozone and nitrogen dioxide (NO_x), "max" is the highest hourly average value in parts per million. For carbon monoxide (CO) max is highest 8-hour average value in parts per million. For sulfur dioxide (SO_x) max is the highest 24-hour average value expressed in parts per billion.

TABLE MM
MAXIMUM LEVELS RECORDED AT LOCAL
STATIONS IN 1987

	Ozone		CO		NO _x		SO _x	
	Max.	Days	Max.	Days	Max.	Days	Max	Days
Napa	11	0	5.6	0	9	0	7	0
Santa Rosa	10	0	4.3	0	9	0	2	0

Source: BAAQMD Meteorology and Data Analysis Section

High CO values develop around slow moving traffic on heavily congested roadways during cold, calm winter nights. In the Bay Area, these conditions typically exist in downtown central business districts such as San Jose. CO values fluctuate yearly due to varying meteorological conditions. In 1983 the Bay Area recorded four exceedances of the 8-hour standard of 9.3 ppm, twenty in 1985, and eight in 1986. The nearby Napa and Santa Rosa Monitoring stations, however, have not recorded any data greater than the standards.

In 1987, the federal standards for total suspended particulates (TSP) were replaced by standards governing particulates smaller than 10 microns (PM-10). These particles, are TSP particles which are detrimental to health since they can penetrate deep into the lungs. Within the Bay Area only a few sites are currently recording PM-10 data, of these, only San Jose has recorded exceedances of the 1540um/m³ standard because of downtown construction. Historically, the federal TSP standard has never been exceeded at Santa Rosa or Napa.

Three agencies share the responsibility of achieving the National Ambient Air Quality Standards (NAAQS) within the Bay Area, the Bay Area Air Quality Management District (BAAQMD), the Association of Bay Area Governments (ABAG), and the Metropolitan Transportation Commission (MTC). These agencies developed a plan to meet the NAAQS by the December 31, 1987 deadline imposed by the Environmental Protection Agency. This plan contained measures to: reduce emissions of industrial sources, improve and encourage participation in the State Inspection and Maintenance program, and increase the use of transportation control measures to reduce motor vehicle travel. However, the Bay Area did not achieve the NAAQS by the 1987 deadline; EPA must now choose a course of action leading towards these goals and meeting all legal requirements.

FINDINGS

1. The Calistoga area is well within the Federal and State Air Quality guidelines.
2. Current ambient air standards have never been exceeded.
3. Though it is part of the Bay Area Air Quality Management District, the exceedances common to the urban areas of this district affect Calistoga only indirectly.
4. Calistoga is affected by regionally dispersed air pollutants. Regional efforts to curb air quality problems should be supported.
5. Polluting commercial and industrial uses should be discouraged from locating within the City.



ECONOMICS/FISCAL

ECONOMICS/FISCAL

INTRODUCTION

The purpose of this section is to provide existing data dealing with local government economics. This data will focus mainly with local government economics, expenditures, revenues, and employment.

REVENUE

The largest revenue generator for the City of Calistoga is the Transient Taxes sector of the economy. This sector is made up of mainly of taxes collected for sleeping accommodations at Bed and Breakfasts, Hotels, and Motels. Table NN provides a description of the revenues for the City of Calistoga for the Fiscal Year 1989-90.

The second largest revenue generator for the 1989-90 Fiscal Year is the Property Taxes sector of the local economy. This figure totals 18.5% of the total revenue for the City. The third largest revenue generator for the 1989-90 Fiscal year is the Sales Tax sector accounting for 15.1% of total revenues. The fourth largest revenue generator is the Other Agencies category accounting for 11.2% of total revenues.

EXPENDITURES

The largest sector is the Public Safety sector. This sector comprises 42.4% of the Budget. Specific expenditures are for Police and Fire Departments. The Fiscal Year 1989-90 budget for this category is unusually high due to construction of a new police facility. Table OO depicts expenditures for the City of Calistoga Fiscal Year 1989-90.

The second largest expenditure sector for the City of Calistoga is the Public Works sector. The Public Works expenditure amounts to 14.8% of total expenditures. This sector includes outlays for the City Engineering and Building Departments, streets and street lights, and Public Work Administration. The third largest expenditure sector is the Administration sector, including such sources as City Hall, the Attorney's office, City Clerk, City Council, and the treasurer. Expenditures for this sector is 14.1% of total expenditures.

TOURISM

Tourism has become one of the most important industries in the Napa Valley. Tourists come to the valley each year to visit wineries, the hot springs, the recreational facilities, and to experience the scenic beauty. Calistoga has developed a successful tourism-based economy to capitalize on the demand for tourism-related needs.

TABLE NN
REVENUES FISCAL YEAR 1989-90

Generator	Percentage
Property Tax	18.5
Sales Tax	15.1
Other Taxes	3.3
Permits, Fines	10.0
Other Agency	11.2
Transient Tax	31.4
Services	2.2
Other Revenue	8.1

Source: City of Calistoga, 1989-90 Annual Budget

TABLE OO
OPERATIONS EXPENDITURES FISCAL YEAR 1989-90

Expenditures	Percentage
Administration	14.1
Planning	9.8
Public Safety	42.4
Parks and Rec.	6.3
Public Works	14.8
Non-Department	5.2
Other	7.5

Source: City of Calistoga, 1989-90 Annual Budget

Calistoga has achieved a constant and continual increase in the tourism industry. The City has continued to capture as much of this steady source of income as the economy will allow. The tourism sector of the economy is continually growing.

There are 19 bed and breakfasts and 12 resort hotel/motels in the City of Calistoga. There are a total of 476 transient units in the City. Although the occupancy rate for the total transient units is approximately 43%, it is expected that the hotel/motel units occupancy rate is approximately 90%.

Although tourism is an economic benefit, tourism also has its associated problems. Tourism has a competing demand for sewer and water services and adds to an existing shortage of parking spaces. Tourism based economics often displace neighborhood commercial uses with tourism commercial uses.

EMPLOYMENT

Napa County Annual Planning Information

Introduction

Employment information is taken from the Napa County Annual Planning Information (NCAPI), June 1989. This information is for Napa County, but it reflects current trends in the City of Calistoga.

According to NCAPI, a general slowing in the rate of economic growth in Napa County will occur over the next two years. Napa County's employment growth will be larger in 1989 than in 1990. Although unemployment levels will be up during the latter part of the forecast, the annual unemployment rate for the 1989-90 outlook period is expected to stay within the 4.5 to 5.0 range.

According to NCAPI, approximately 2,700 new jobs are expected to be generated in Napa County during the coming two years. Compared to 1988, overall growth will be slower in each of the forecast years.

Service Industries

Thirty percent of the new jobs will come from employers in the service industries. Health care and business services will be among the strongest. Tourism will stimulate additional job increases in hotels and other lodging places, as new services are built and others expand.

Retail Trade

Tourism will generate many new jobs in the retail trade industry division. Eating and drinking places, which employ over a third of the retail trade work force in Napa County, will be responsible for 70% of the new retail jobs expected over the 1989-90 period. Food stores will also create new employment opportunities, while the remainder of the retail trade division will show modest increases as well.

Manufacturing

The goods producing sector of the Napa economy is expected to increase its payrolls over the outlook period. Nondurable goods producers, principally the Valley's wineries, will be adding a total of 700 jobs in the next two years. The wine making industry provides about 75% of the jobs in the County. Employment growth will continue during the forecast period to meet high demand for premium wines. The sake manufacturing plant beginning operation in early 1990 will also contribute substantially.

Agriculture

Employment in agriculture comprised about seven percent of the total annual average wage and salary jobs in Napa County in 1988. The bulk of these jobs are in the county's vineyards. Employment will rise steadily in the coming years, as more grape bearing acreage comes into production.

Association of Bay Area Governments

The Association of Bay Area Governments Projections '87 forecasts the employment conditions in Napa County and Calistoga to the year 2005. Table PP provides a summary of the information provided for the City of Calistoga. Total jobs in the City will rise from 2,800 in 1985 to 4,200 in 2005. The retail industry will experience the largest percentage of growth, while the agricultural industry will experience a small loss.

FINDINGS

1. The City of Calistoga receives its largest revenues from the Transient Taxes sector of the economy. This sector is made up mainly of taxes collected for sleeping accommodations.
2. The City's largest expenditure is the Public Safety sector. This sector includes monies for police, streets, street lights, and outlays for City Engineering and Building Departments.

TABLE PP
ABAG EMPLOYMENT PROJECTIONS - 87
CALISTOGA

	1985	1990	1995	2000	2005
Employed Residents	1,500	1,600	2,000	2,400	2,700
Total Jobs	2,800	3,200	3,500	3,800	4,200
Agricultural/ Mining Jobs	250	260	260	260	240
Manufacturing Jobs	310	340	340	420	480
Retail Jobs	710	880	990	1,130	1,310
Service Jobs	1,010	1,120	1,240	1,310	1,440
Other Jobs	540	630	660	680	700
Mean Household Income	35,400	36,100	38,100	41,900	45,000

Source: Association of Bay Area Governments

3. During the 1989-90 forecast period, employment growth in Napa County will be slower than the last several years, with gains a bit larger in 1989 than in 1990.
4. A total of 2,700 new jobs are expected in the coming two years in Napa County. About 1,500 new jobs will be generated during 1989, with growth slowing down to 1,200 in 1990.
5. ABAG projects total jobs within Calistoga to rise from 2,800 in 1985 to 4,200 in 2005. The retail industry will experience the largest percentage of growth, while the agricultural industry will experience a small loss.



HEALTH AND SAFETY

HEALTH AND SAFETY

INTRODUCTION

The City of Calistoga is located in an area subject to natural hazards. This section provides a data and information related to fire hazards, seismic hazards, hydrology/flooding, and hazardous waste.

FIRE HAZARDS

Napa County like elsewhere in the State of California has a wildland fire potential. The combination of highly flammable vegetation, long and dry summers, rugged topography, and people who live, work and recreate in the wildlands adds up to a situation that results in wildland fire risk and hazards (Napa County General Plan, 1983).

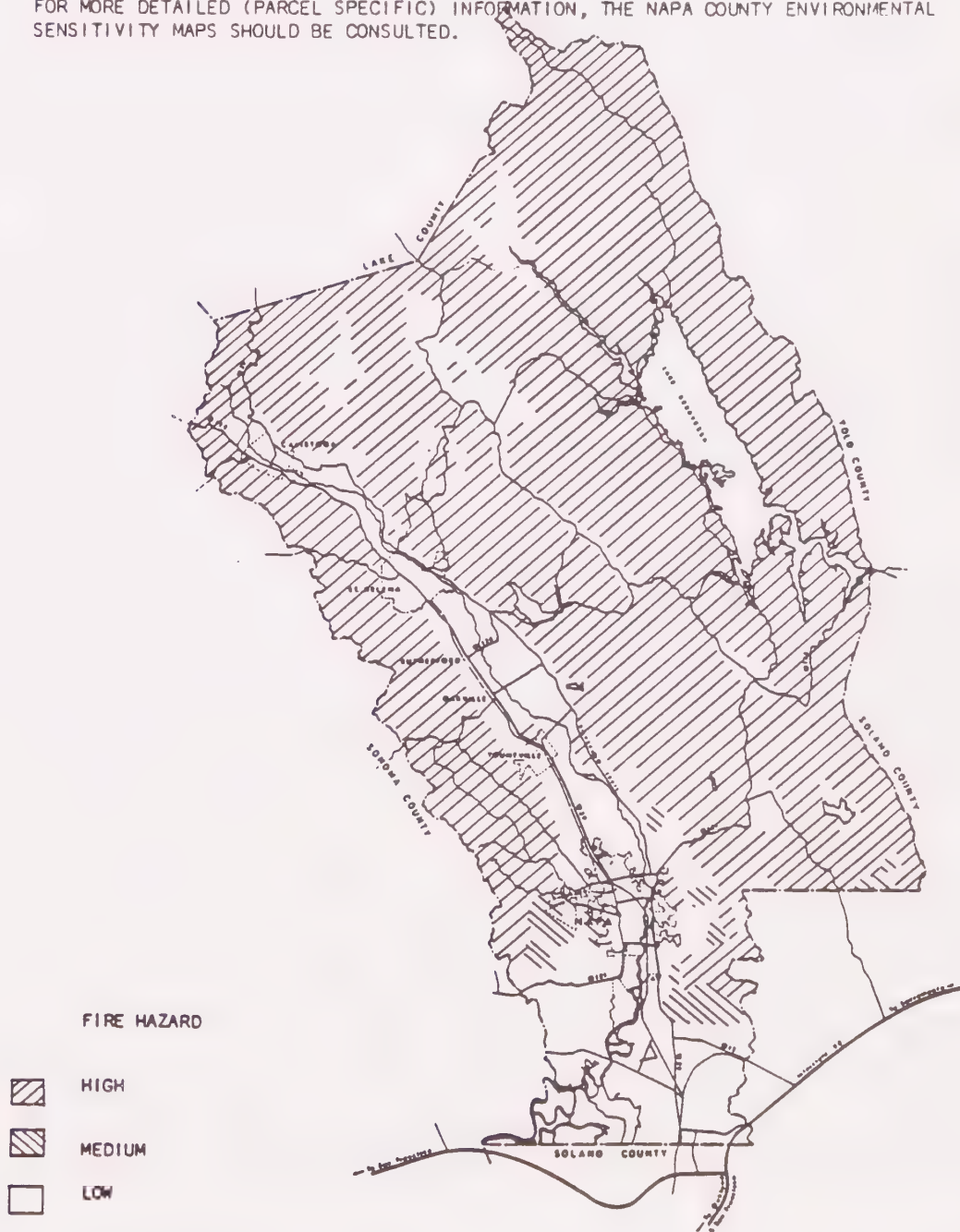
The California Department of Forestry (CDF) has developed a Fire Hazard Severity Scale which utilizes three criteria in order to evaluate and designate potential fire hazard areas in wildland areas. The criteria are fuel loading (vegetation), fire weather (winds, temperatures, humidities, and fuel moisture contents) and topography (degree of slope). Vegetation clearance standards are enforced by the Department of Forestry (Napa County General Plan 1983).

With its Mediterranean Climate, Napa County experiences a long, dry summer from May to November during which winds, temperatures, humidities, and fuel moisture contents maintain high hazard levels. Of these four factors, wind is the most critical factor. Steep slopes in Napa County contribute to fire hazard by intensifying the effects of wind and making fire suppression difficult (Napa County General Plan, 1983).

Criteria in the Fire Hazard Severity Scale has been used by the CDF to map areas of fire hazard in Napa County. The map appears on Exhibit 19. In general, the City of Calistoga is classified as an area of low fire hazard risk with the exception of the western portion of the City which is situated on steeper slopes and has more vegetation.

According to Mark Thomas, City Fire Chief, there have been no problems with wildland fires in the last four years. In 1982 there was a large wildland fire in the Mt. St. Helena area. During the period of December 1985 to January 1986 there were two relatively small fires in the area. One fire was ignited by fallen power lines and burned 50 acres. Another fire burned 150 acres and was caused by lightning strike (phone interview, Chief Thomas, October 6, 1989).

THIS MAP IS INTENDED TO PROVIDE A GENERALIZED PICTURE OF WILDLAND FIRE HAZARDS;
FOR MORE DETAILED (PARCEL SPECIFIC) INFORMATION, THE NAPA COUNTY ENVIRONMENTAL
SENSITIVITY MAPS SHOULD BE CONSULTED.



Source: Napa County General Plan



FIRE HAZARDS

MASTER ENVIRONMENTAL ASSESSMENT City of Calistoga

STA inc.
no scale



Exhibit 19

SEISMIC HAZARDS

Earthquakes give rise to various seismic hazards including surface faulting, ground shaking, associated ground failure, generation of large waves in bodies of water, and regional subsidence or downwarping. Seismic hazards can cause damage to structures and risk the health and safety of citizens. Seismic hazards vary widely from area to area, and the level of hazard depends on both geologic conditions and the extent and type of land use (U.S. Geological Survey 1974).

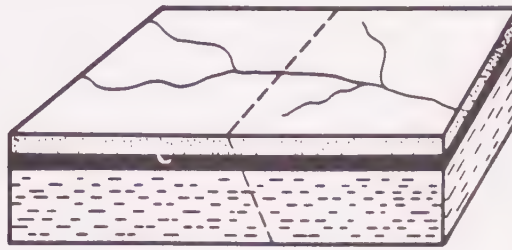
Regional and local geology has been largely abstracted from several documents including Seismic Hazards and Land-Use Planning published by the U.S. Geological Survey in 1974 and a recent environmental assessment prepared by Geo/Resource Consultants for the proposed Police Department Facility submitted to the City in July 1989. In addition, the Seismic Safety Element of the Napa County General Plan is also referenced as it contains information on Calistoga and the study area. The County Safety Element is based on a regularly updated background report.

Surface Faulting

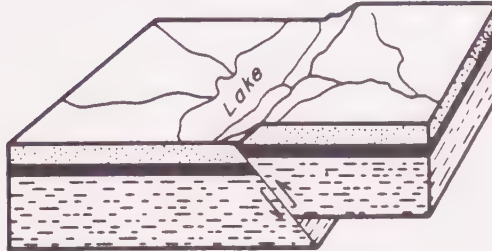
Faults are areas of failure along surfaces in earth materials where the materials on opposite sides of the failure have moved relative to one another in response to the accumulation of stress. Exhibit 20 shows the different types of faults. Any fault movement beneath a building in excess of an inch or two could have catastrophic effects on structures depending on design and construction and the shaking stresses the structure undergoes at the same time (U.S. Geological Survey 1974).

The San Francisco Bay Region contains a number of major active faults. An active fault is defined by the State Mine and Geology Board as one which has "had surface displacement within Holocene time (about the last 11,000 years)" (Geo/Resource Consultants July 1989). The three most prominent faults in the region are the San Andreas, Hayward and Calaveras Faults. Major faults in California and significant earthquakes are presented on Exhibit 21. Potential seismic hazards associated with the three faults include strong ground motion and surface rupture along active fault traces. Secondary effects could include seismically induced ground failure such as liquefaction, rapid ground settlement or lateral spreading (Geo/Resource Consultants, July 1989).

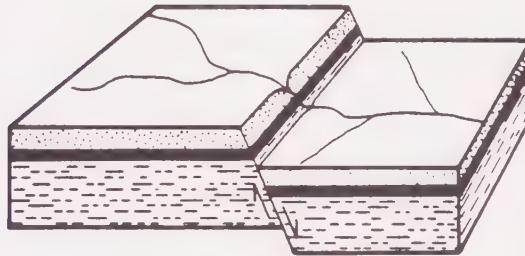
During the last 200 years, several major earthquakes of Richter Magnitude 7.0 or greater have occurred in the San Francisco region, resulting in loss of life and large amounts of structural damage. The most recent event took place October 17, 1989, when a 7.1 magnitude earthquake struck the Bay Area. The epicenter was located north of the City of Santa Cruz. Calistoga experienced a light shock which only lasted a few seconds. No appreciable damage occurred.



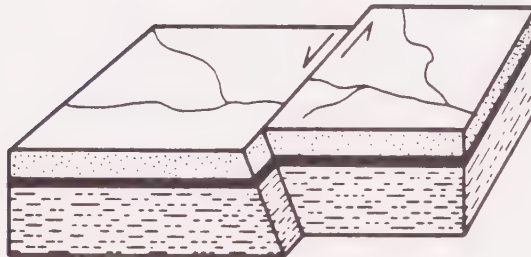
Earth block before movement



1a. Thrust or reverse fault



1b. Normal fault

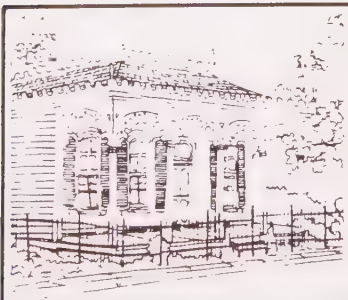


1c. Left-lateral fault



1d. Monoclinal fold caused by faulting at depth

Source: Geological Survey Circular 690

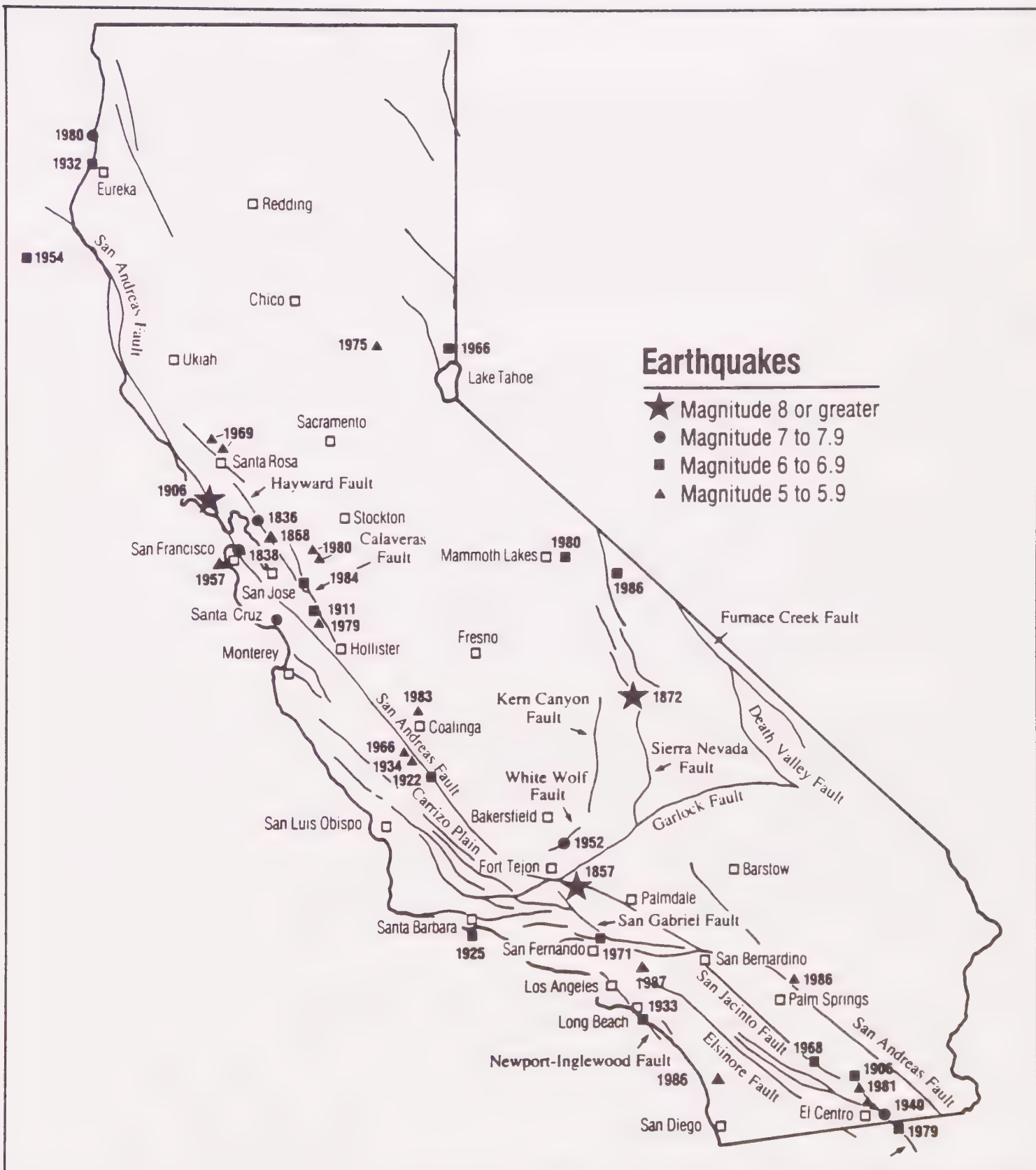


TYPES OF FAULTS MASTER ENVIRONMENTAL ASSESSMENT City of Calistoga

STA inc.
no scale



Exhibit 20



Source: Napa County General Plan



MAJOR FAULTS & EARTHQUAKES, CALIF. MASTER ENVIRONMENTAL ASSESSMENT City of Calistoga

STA inc.

no scale



Exhibit 21

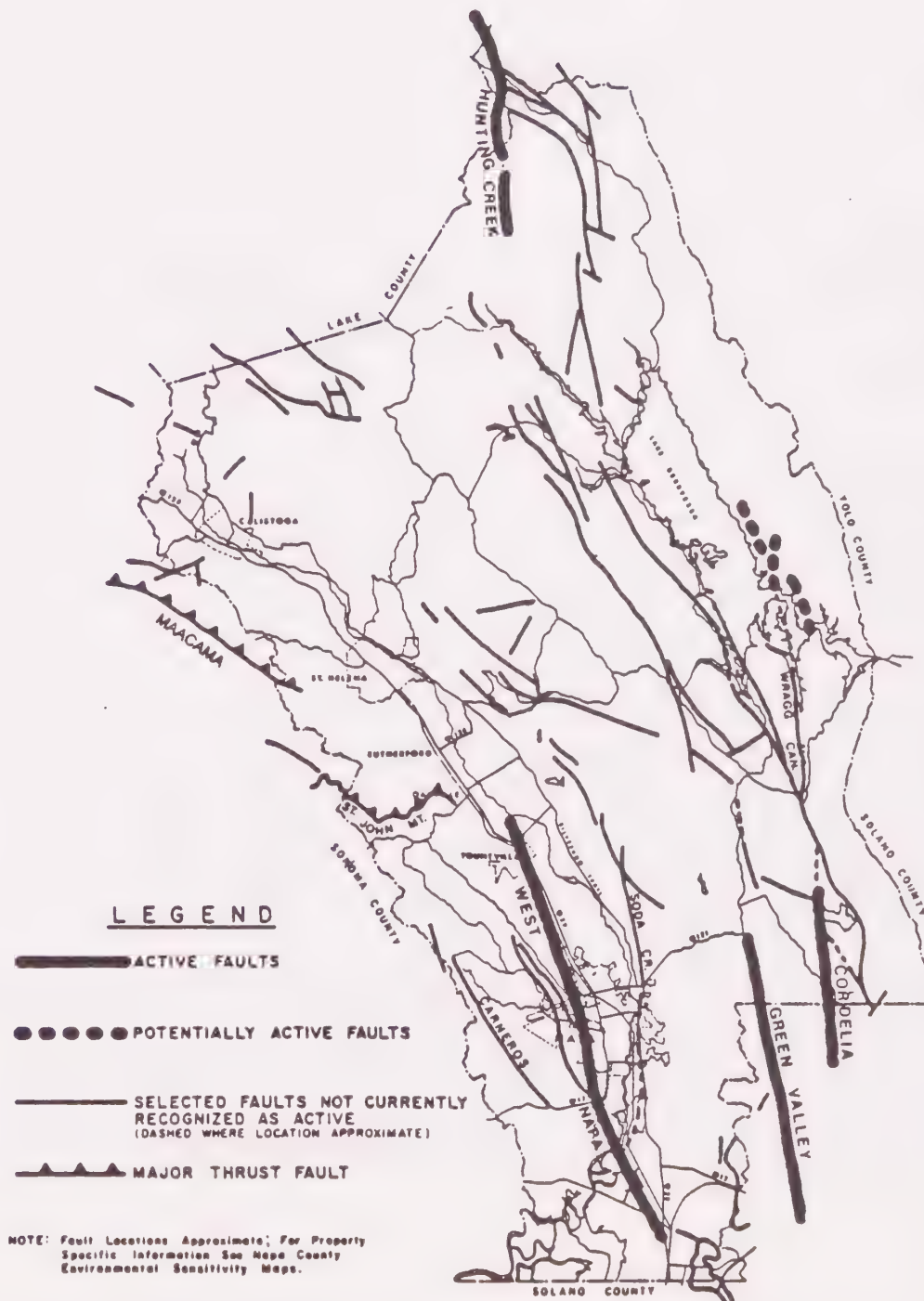
The Richter Scale is a logarithmic scale developed by Charles Richter to measure earthquake magnitude by the energy released, as opposed to earthquake intensity (Geo/Resource Consultants, July 1989). The largest recorded earthquakes were in 1836 and 1868 (each 6.8 in magnitude) on the Hayward fault and in 1906 (7.7 in magnitude) on the San Andreas fault. The heaviest damage resulted from liquefaction and rapid settlement in areas underlain by soft bay mud and fill material. In Santa Rosa, heavy damage resulted from intense ground shaking amplified by the presence of loose fill in old stream channels and by the saturation of alluvium at shallow depths (Geo/Resource Consultants July 1989).

Active faults in the County of Napa include the Cordelia, Green Valley and West Napa Faults. The Hunting Creek Fault is a fourth active fault that may be northward extension of the Green Valley Fault. Faults in Napa County roughly parallel the northwest-southeast course of the San Andreas Fault (Napa County General Plan 1983).

The closest active fault in Napa County to the City is the West Napa Fault. The north terminus of this fault is approximately 15 miles south of Calistoga. Based on fault length, the three main active faults in Napa County are capable of producing earthquakes with a Richter Magnitude of up to 6.75. Such an earthquake, which is considered a moderate-sized event, would be capable of producing a substantial amount of damage, even to wood framed structures (Geo/Resource Consultants, July 1989). Exhibit 22 shows active and inactive faults within the County limits.

Active faults relatively close to the City include the Maacama and Rogers Creek-Healdsburg faults in Sonoma County. In October 1969 two moderate earthquakes of magnitudes 5.6 and 5.7 occurred on the Healdsburg-Rogers Creek fault, on the north side of Santa Rosa, approximately 20 miles south west of the study area. These earthquakes caused unexpected damage to earthquake-resistant buildings and deformation of the underlying alluvium in the form of lurching or collapse of unconsolidated fill. Earthquake effects were confined within a 2 mile long zone along the fault trace (Geo/Resource Consultants, July 1989). A 6.2 magnitude earthquake occurred on the Rodgers Creek fault in 1898 (Wesnousky 1986).

A thrust fault has been noted approximately four miles southwest of the City. This fault may be a southern extension of the Maacama fault. Strong geomorphic evidence of Quaternary (within the last two million years) surface movement on the Maacama fault includes offset exposed in a road cut on Highway 128 and approximately 1.25 miles southeast of Big Sulphur Creek. Evidence suggests that an earthquake of magnitude 5.9 has occurred in the area of the thrust fault extension between 1969 and 1973. Potentially damaging groundshaking resulting from earthquake activity will occur somewhere in Sonoma County every 20 to 30 years. This conclusion is relevant to the Calistoga Study Area due to its proximity (approximately 5 miles) to Sonoma County (Geo/Resource Consultants, July 1989).



FEB. 19, 1993

Source: Napa County General Plan



FAULTS WITHIN NAPA COUNTY MASTER ENVIRONMENTAL ASSESSMENT City of Calistoga

STA inc.
no scale



Exhibit 22

Studies suggest that "[t]he likely transfer of slip northward from the Hayward to the Healdsburg, Rodgers Creek, and Maacama fault zones implies a zone of high seismic hazard extending north of San Francisco Bay as well (Wesnousky 1986). Recent research has been conducted in the Napa Valley area (Wong 1990). Results show the following:

Contemporary seismicity north of the San Francisco Bay region in northern California has been concentrated along two major fault zones east of the seismically quiescent San Andreas fault: the Rodgers Creek - Maacama and the Green Valley - Bartlett Springs faults (Cockerham, 1986; Eberhart-Phillips, 1988). Furlong et al. (1989) suggest that these zones represent young faulting possibly related to a newly developing plate boundary.

...Based on a contrast in deformation, Fox (1983) has defined two structural blocks in the region north of San Francisco Bay: the Sebastopol block on the west and the relatively intensely deformed (folded) Santa Rosa block to the east. The latter is cut by eight major north-northwest-trending right-lateral, strike-slip faults or fault systems including the Tolay, Rodgers Creek, Healdsburg, Maacama, Bennett Valley, Carneros, West Napa and Green Valley faults....

The eastern boundary of the Coast Ranges and the Santa Rosa block (?) coincides with a postulated 600 km-long zone of complex thrust/reverse faulting which forms the boundary between the Coast Ranges and the western portion of the Sierran block (the Great Valley) (Wong and Ely, 1983; Wong et al. 1988; Wentworth and Zoback, 1989). Significant crustal deformation has and is occurring along the San Andreas fault and to a lesser degree, along the CRSB boundary zone and on numerous faults in between.

Information on maximum credible earthquakes affecting the City of Calistoga is presented on Table QQ. Maximum probable earthquakes are normally estimated at .25 to .5 less in magnitude than a maximum credible earthquake. Historic earthquakes are also a good indicator of maximum probable earthquakes. (phone interview, Kit Custis, State of California, Division of Mines and Geology, September 10, 1990) Historic earthquakes are discussed on the previous pages.

Ground Shaking

Earthquake ground shaking in many instances causes the most widespread earthquake damage. The intensity of groundshaking can be several times larger on sites underlain by thick deposits of saturated sediments than on bedrock. The amplification effects of local geologic deposits, the amount of ground shaking at a particular site, depends on (1) characteristics of the earthquake source (magnitude, location, and area of causative fault surface) and (2) distance from the fault.

TABLE QQ
ACTIVE AND POTENTIALLY ACTIVE FAULTS

Fault	Length (km)	Distance ¹	Moment Magnitude	Horizontal Acceler- ation (g) ²	Rupture Repeat Time (Yrs)
Cordelia	22	40	6.7	.08	> 10,000 yrs
Green Valley	35	40	6.9	.09	424
Hayward (C)	51	73	7.1	.04	556
Healdsburg	32	21	7.0	.20	228
Maacama	151	6	7.6	.70	696
Rodgers Creek	38	26	6.9	.30	255
San Andreas (Shelter Cove to San Juan Bautista)	420	62	7.8	.20+	300
West Napa	17	24	6.5	.30	> 10,000

Source: Wesnousky 1986
U.S.G.S. Professional Paper 1360

Notes: ¹Estimated distance in kilometers from the City to the fault.

²"g" stands for acceleration gravity.

The energy that is released as the earth's crust moves at the earthquake focus is transmitted as elastic waves up through the bedrock to become a series of complex waves or oscillations in surficial materials. Most soils (surficial material) and rocks have elastic properties up to certain levels of stress. If the stress load of an earthquake is too great, the soils and rocks will deform (Napa County General Plan 1983).

A subjective measure of the force of an earthquake at a particular place as determined by its effects on persons, structures, and earth materials. The principal scale used is the Modified Mercalli Scale is a measure of earthquake intensity. Lower numbers on the scale indicate less severe shaking and are based on what people feel; intermediate numbers are assigned according to the type and amount of building damage sustained, and higher numbers principally to secondary geologic effects (U.S. Geological Survey 1974). Table RR summarizes the Modified Mercalli Scale in relation to the Richter Scale.

The County of Napa General Plan has compiled a list of felt reports in the County during the period of 1864 to 1969. Table SS lists the reports associated with the City of Calistoga. In all, eighteen reports are noted on the table.

Ground Failure/Soil Stability

Earth materials in a natural conditions tend to reach equilibrium over a long period of time. In geologically young and active areas such as California, there are many regions where earth materials have not yet reached a natural state of stability. Many valleys and bay margins are underlain by recent loose materials that have not been compacted and hardened by long-term natural processes (U.S. Geological Survey 1974).

Landslides are common on most of the hills and mountains as loose material moves downslope. In addition, many activities of man tend to make the earth materials less stable and increase the chance of ground failure. Some of the natural causes of instability are earthquakes, weak materials, stream and coastal erosion, and heavy rainfall. Human activities that contribute to instability include oversteepening of slopes by undercutting them or overloading hem with artificial fill, extensive irrigation, poor drainage or even ground-water withdrawal, and removal of stabilizing vegetation. These causes of failure, which normally produce landslides and differential settlement, are augmented during earthquakes by strong ground motions that result in rapid changes in the state of earth materials (U.S. Geological Survey 1974). It is these changes by means of liquefaction and loss of strength in fine-grained materials, that result in many landslides during earthquakes as well as differential settlement, subsidence, ground cracking, ground lurching and other changes in the ground surface.

TABLE RR

MODIFIED MERCALLI SCALE IN RELATION TO RICHTER SCALE

Richter Magnitude	Expected Modified Mercalli Maximum Intensity at Epicenter	
2	I - II	Usually detected only by instruments
3	III	Felt indoors
4	IV - V	Felt by most people; slight damage
5	VI - VII	Felt by all; many frightened and run outdoors; damage minor to moderate
6	VII - VIII	Everybody runs outdoors; damage moderate to major
7	IX - X	Major damage
8 +	X - XII	Total and Major Damages

Source: Napa County General Plan, 1983

TABLE SS
FELT REPORTS IN CALISTOGA 1864 - 1989

Year	Date	Time	Description
1868	May 9	23:30	
1871	June 21		Severe
	October 21		
1885	Feb 5	23:00	Light shock, continued a few seconds, not severe
	Feb 6	02:00	Lighter than earlier shock
1929	Sept 2	17:45	
	Sept 8	10:45	Very slight
1931	Apr 3	23:45	Feeble
	Apr 6	00:07	Feeble
	May 29	02:43	
1932	Sept 22	12:50	Weak
	Sept 22	23:48	IV
	Sept 23	03:45	Weak
1952	Sept 25	20:35	IV. Buildings creaked, loose objects swayed, light fixtures rattled. (3.2)
1958	Jan 31	23:08	IV. (3.4)
1959	Dec 15	18:28	(4.1)
1962	Feb 28	05:40	Iv. Maximum, also Kenwood, Santa Rosa
1989	Oct 17	17:04	Light shock, continued a few seconds, not severe (1)

Source: Napa County General Plan, 1983

Note: (1) Reference Richard Spitler, Planning and Public Works Director, City of Calistoga

According to the Napa County General Plan, landslides may be the most important seismic hazard in the County. Many portions of the County are susceptible, and few structures can withstand landslides. Exhibit 23 adapted from the County General Plan estimates the risk of landslide in Calistoga as negligible to low.

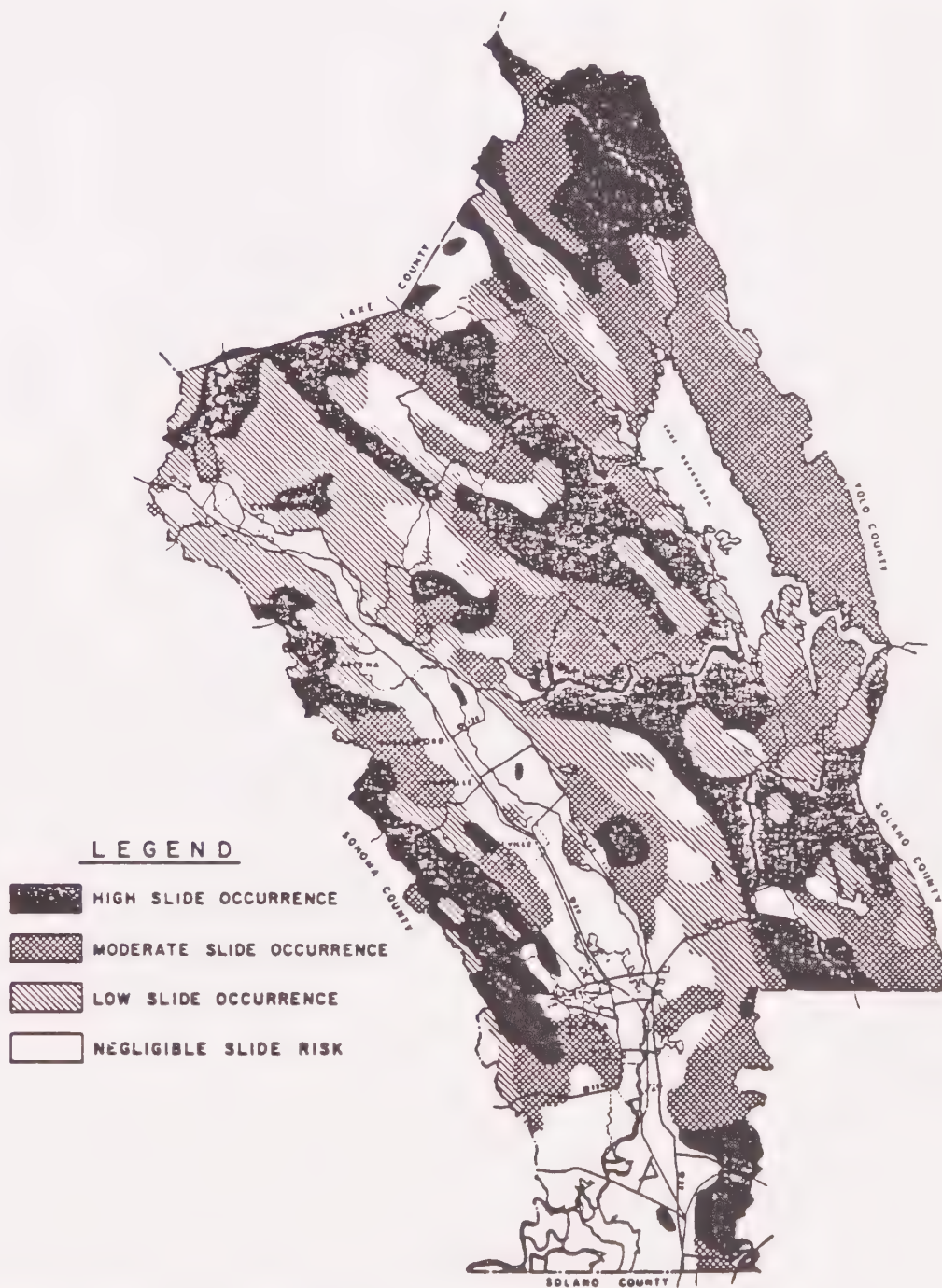
A region-wide study of slope stability indicates three types of slope-stability categories for the area including and surrounding the City of Calistoga. These categories are shown on Table TT. A majority of the City is located in Category 1, Low Risk to Life and Property. Small areas near the outer northern, eastern, and western boundaries of Calistoga's Study Area are designated as Category 2, Low Risk to Life and Property, and Category 3, Moderate Risk to Life and Property. The categories are a general indicator of slope stability. More detailed data on local conditions is necessary for use in land use planning decisions. (Nilsen and Wright and others 1979) Policies regarding site-specific geologic investigations are provided in General Plan Update Volume II: Policy and Program Document.

Liquefaction is a common mechanism causing many types of ground failure. It occurs when the strength of saturated, loose, granular materials (silt, sand, or gravel) is dramatically reduced, such as may occur during an earthquake. The earthquake-induced deformation transforms a stable granular material into a fluidlike state in which the solid particles are virtually in suspension, similar to quicksand (U.S. Geological Survey 1974).

The County of Napa General Plan has identified a large portion of the Napa Valley including Calistoga to be at risk for liquefaction. Please refer to Exhibit 24. Further study is needed to determine the location and extent of sand deposits in Napa County that are susceptible to liquefaction. It would be a fair assumption that only the Quaternary alluvial deposits, such as locations along the Napa River would be suspected. While no record of liquefaction has been found, there is reason to believe that the problem exists due to the alluvial nature of valley sediments (Napa County General Plan 1983).

Land Subsidence

Because of the depth and conformation of alluvium in Napa Valley, land subsidence in Napa County is likely to be restricted to instant compaction of sands (liquefaction). Subsidence may also occur with the long-term compaction and plastic flow of thick, water saturated mud in the marshlands. The southern portion of Napa County historically marshland and tide flats. This area would be most suspect in terms of possible subsidence (Napa County General Plan 1983).



NOTE: Map Generalized — Not Suitable For Evaluating Landslide Hazards On A Parcel Specific Basis; For The More Detailed Information Needed To Do This See Napa County Environmental Sensitivity Maps.

Source: Napa County General Plan

LANDSLIDES IN NAPA COUNTY

MASTER
ENVIRONMENTAL ASSESSMENT
City of Calistoga

STA inc.

no scale



Exhibit 23



TABLE TT
RELATIVE SLOPE STABILITY CATEGORIES

Category	Slope (Percent)		Risk to Life Stability & Property	Comments
1	0-5	Generally Stable	Low	<ol style="list-style-type: none"> 1. Locally bedrock may be unstable and therefore susceptible to landsliding. 2. Limited areas along creeks, rivers, coastal cliffs, and edges of terraces have steeper slopes than those generally found in this category. Riverbanks may be particularly hazardous during periods of flooding. 3. Some deposits (alluvial terrace, alluvial fan) may be locally susceptible to flooding and debris flows from surrounding uplands during periods of intense rainfall.
2	5-15	Relatively Stable	Low	<ol style="list-style-type: none"> 1. Some areas may be underlain by bedrock types that are locally unstable and therefore susceptible to landsliding. 2. Limited areas along creeks, rivers, or coastal margins have steeper slopes and may be susceptible to landsliding.
3	>15 (some as steep as 90 degrees)	Reasonable Stable	Moderate	<ol style="list-style-type: none"> 1. Small areas are locally unstable owing to various reasons including: <ol style="list-style-type: none"> a. Failure of areas above or below that are underlain by bedrock types susceptible to landsliding or by landslide deposits; b. Proximity to areas of active erosion along creeks, rivers, and coastal areas; c. Saturated slopes adjacent to lakes and reservoirs; d. Proximity to active landslides that may be enlarging; e. Activities such as logging, cutting, and filling, construction and adding moisture to slopes. 2. This category may include small landslide deposits not large enough to be shown.

Source: Nilsen and Wright 1979



Source: Napa County General Plan



LIQUEFACTION

MASTER ENVIRONMENTAL ASSESSMENT City of Calistoga

STA inc.
no scale



Exhibit 24

Tsunamis/Seiche

A Tsunami is a large seawave generated by earthquakes. These waves travel across the ocean at hundreds of miles an hour and are capable of causing waves cresting tens of feet high. Since Napa County has no ocean frontage, the risk of a tsunami is low. A tsunami at the Golden Gate with a run up of twenty feet, would be negligible by the time it reached Napa County. A tsunami of that scale is likely to occur once in every 200 years. (Napa County General Plan 1983)

A seiche is an abnormally high fluctuation in the water level of a bay or lake which can be compared to the back-and-forth sloshing of water in a tub. Seiches can be caused by winds, changes in atmospheric pressure, underwater earthquakes, or landslides into the water. Seiches caused by winds or atmospheric pressure changes may measure in inches whereas seiches caused by underwater earthquakes or landslides into the water have caused runups as high as 800 feet (vertical) above the normal water level. Such extreme cases are rare (Napa County General Plan 1983).

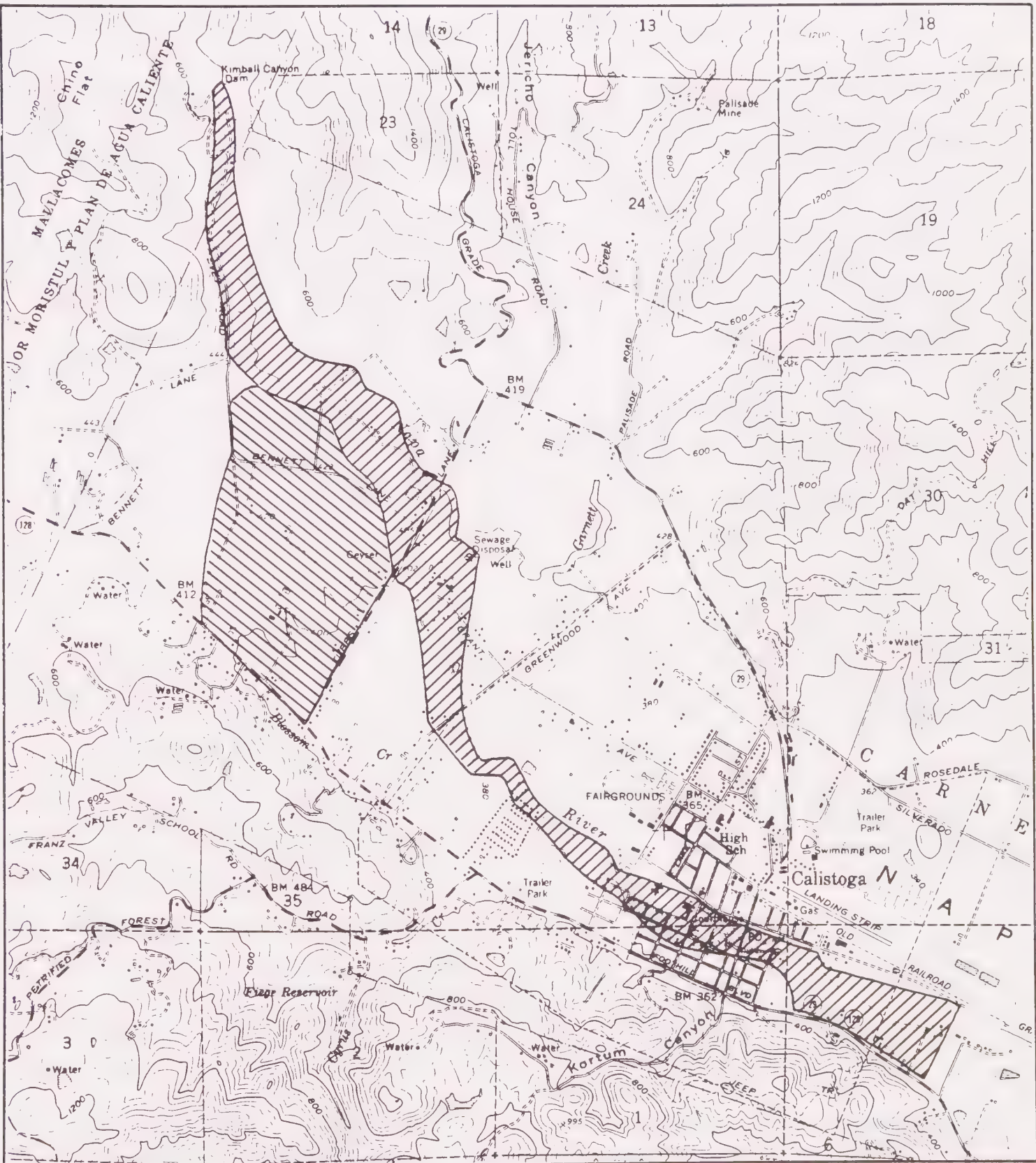
Hazards from seiches can roughly be estimated for river and reservoir shorelines through examination of historic records. Potential areas of catastrophic inundation from dam and reservoir failure or from landslide - generated waves that overtop dam crests can be mapped for all large bodies of water perched above populated areas (U.S. Geological Survey 1974). This inundation analysis has been performed for the Kimball Dam.

A map was prepared in 1982 to illustrate the effects of the failure of Kimball Dam. The map is shown in Exhibit 25. This map was prepared by Francis Smigle, City Engineer. Water from the overflow pond would extend south to Tubbs Lane. The Napa Riverflow boundaries would increase substantially as it reached the southern portion of the City.

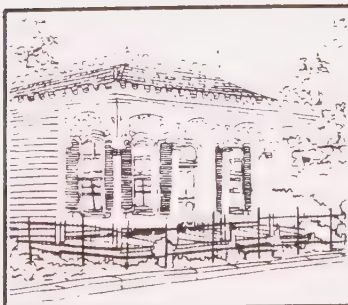
Unreinforced Masonry Buildings

In 1986 a bill (S.B. 547 [Alquist]) was passed in the State Legislature requiring that all types of Unreinforced Masonry buildings be inspected. This bill has since been codified (Government Code Sec. 8875 et seq.). All local jurisdictions within Zone 4 of the Seismic Safety Zone which generally includes most of the coastal areas westward to the Central Valley must comply. Calistoga is located within this zone.

Specifically the law requires that any potentially hazardous URM buildings be identified. These buildings are especially vulnerable to damage caused by earthquakes and associated groundshaking and liquefaction. Next a mitigation program must be developed to reduce the hazards. Last, the jurisdiction is required to submit the information in potentially hazardous buildings and mitigation programs to the State Seismic Safety Commission by January 1, 1990.



Source: City of Calistoga



KIMBALL DAM INUNDATION MAP MASTER ENVIRONMENTAL ASSESSMENT City of Calistoga

STA inc.

no scale



Exhibit 25

Several types of buildings are exempt from inspection under the law. These include warehouses and similar buildings with few occupants, unless used for emergency services or supplies, residential buildings with five or fewer living units, and buildings owned by the federal or state government.

Historic buildings are exempt from the identification stage. The Seismic Safety Commission believes that historic buildings should be included in the mitigation programs. Historic property includes "objects, buildings, structures, monuments, or collections thereof on existing national, state or local historic registers or official inventories such as the National Register of Historic Places and State Historical Landmarks" (California Health and Safety Code Section 37602).

In general, buildings at risk of seismic damage are likely to be public buildings located within the identified historic areas of the City (Richard Spitler, Planning Director November 7, 1989). Calistoga's historic resources and zones of analysis are reported in the Napa County Historic Resources Inventory, Calistoga and Yountville Volume 1978. This information is included in the Cultural Resources Section of this MEA.

HYDROLOGY/FLOODING

The Napa Valley watershed is drained by the Napa River and its tributaries. As the Napa River descends into the valley, it incises older alluvial and fluvial deposits, forming a relief from stream base to surface grade from five to about 25 feet. Annual peak flow in the Napa River ranges from 670 cubic feet per second (cfs) to 12,600 cfs for 29 years of record (California Energy Commission, October 1986).

The 39-mile length of the Napa River flood plain extends from San Pablo Bay to its headwaters just north of Calistoga. The river, which flows in a southeasterly direction, slopes approximately 18 feet per mile near Calistoga. (U.S. Department of Housing and Urban Development 1979).

The principal information on flooding in Calistoga is provided in a 1979 Flood Insurance Study prepared by the U.S. Department of Housing and Urban Development, Federal Insurance Administration. The purpose of the study was to "investigate the existence and severity of flood hazards ... and to aid in the administration of the National Flood Insurance Act of 1973." In addition, the study was intended to be used by local and regional planners to "promote sound land use and flood plain development."

Frequent flooding occurs in Napa Valley due to heavy rainfall, which occurs predominantly from December through February. This results in major damage to urban areas and farmlands. As of 1977, nineteen damaging floods had been recorded since 1862. At the time of the study, the highest flood record, a 10-year event, was experienced in 1940 at St.

Helena. There are no known records of the Napa River flooding within the corporate limits of Calistoga (U.S. Department of Housing and Urban Development, 1979).

Flood events of a magnitude which are expected to be equalled or exceeded once on the average during and 10-, 50-, 100-, and 500-year period (recurrence interval) have been selected as having special significance for flood plain management and for flood insurance premium rates. These events, commonly termed the 10-, 50-, 100-, and 500-year floods, have a 10, 2, 1 and .2 percent chance respectively, of being equalled or exceeded during any year.

Although the recurrence interval represents the long term average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered.

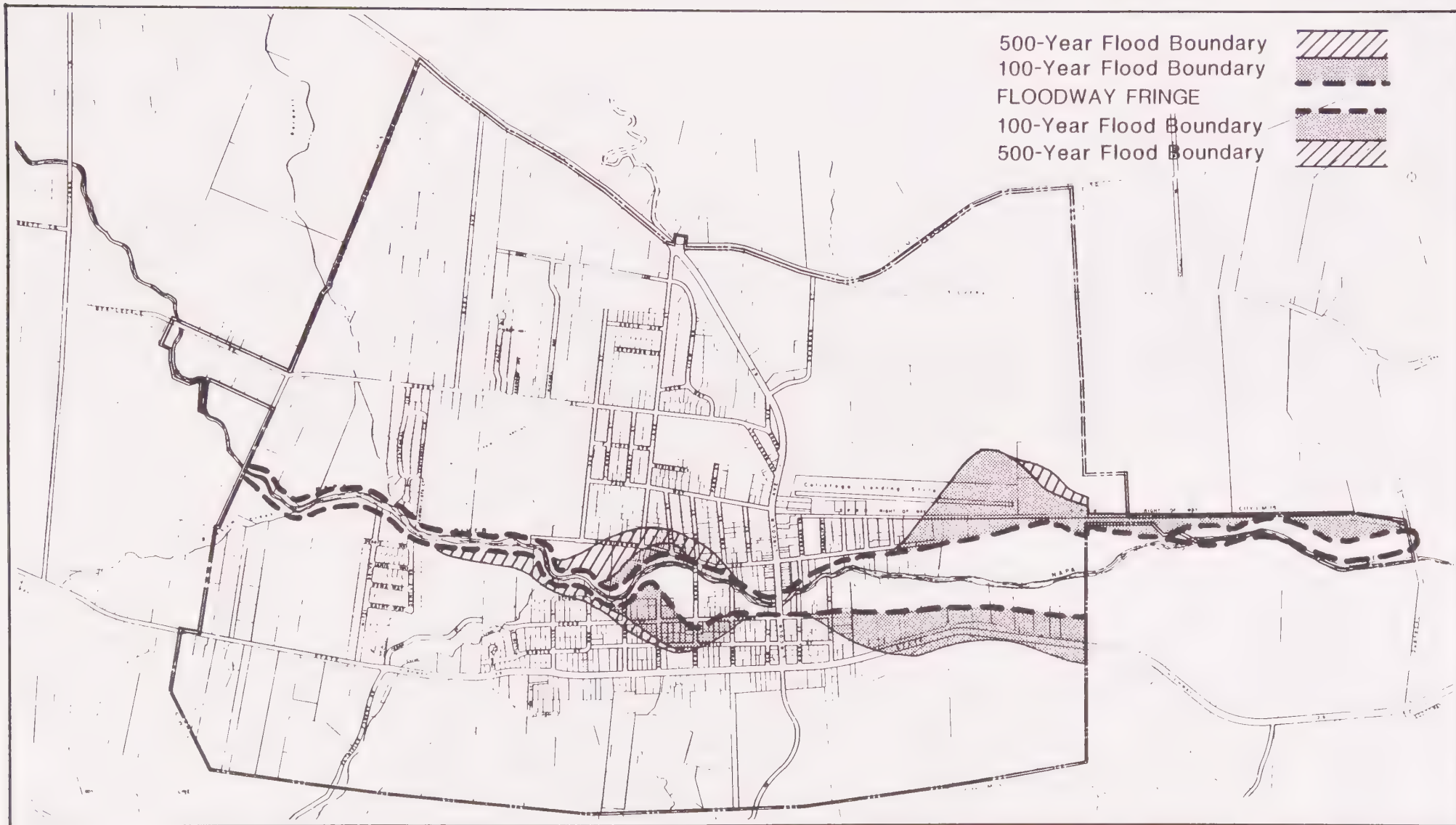
Hydrologic analyses were carried out to establish the peak discharge-frequency relationships for floods of the selected recurrence intervals for each stream studied in detail in the community. Water bodies studied included the Napa River, Cyrus Creek, Blossom Creek, and Garnett Creek. For the three creeks, analyses showed that the floods having recurrence intervals of 10, 100, and 500 years are contained in their natural channels. No flood boundaries were prepared for the creeks.

A floodway for the Napa River was developed based on the occurrence of a 100-year flood. The floodway map is presented as Exhibit 26. This map was developed from aerial photographs. To accurately assess land elevations, the floodway map should be revised.

Encroachment on floodplains, such as artificial fill, reduces the flood-carrying capacity and increases flood heights, thus increasing flood hazards in areas beyond the encroachment itself. Flood plain management involves balancing the economic gain from flood plain development against the resulting increase in flood hazard.

HAZARDOUS WASTE

In March 1988, The County of Napa prepared a Draft Hazardous Waste Management Plan. The purpose of the Plan is to support county and regional planning providing for the proper reduction, recycling, storage, transfer, and disposal of hazardous waste within its boundaries. 95 percent of the waste stream in Napa County is generated by small-quantity generators and households. The major waste group in the waste stream is waste oil. The eight generalized treatment methods for hazardous waste include aqueous treatment for organics, aqueous treatment for metals/neutralization, incineration, solvent recovery, oil recovery, other recycling, stabilization, and residuals disposal.



FLOODWAY MAP

MASTER ENVIRONMENTAL ASSESSMENT

City of Calistoga

STA inc.

no scale

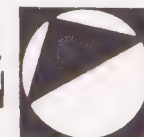


Exhibit 26

The State Office of Permit Assistance provides a copy of Hazardous Waste and/or substance sites list to each jurisdiction. As of June 1989, two sites were identified within the Calistoga area. These sites are as follows:

- Chevron
1107 Foothill Boulevard
Problem: Tank Leak
Material: Gasoline
- Calistoga Mineral Water
504 Washington Street
Problem: Spill
Material: Diesel

Each of these sites has been investigated by the Water Resources Control Board. Unless sites have been investigated by the Department of Health Services, water wells investigated do not contain any contaminants in excess of their state action levels. In the June report none of the sites were investigated by the Department of Health Services (Correspondence, Robert P. Martinez to City Planning Director, June 1989).

In addition, the City has identified another contamination site:

- City Hall Parking Lot
1232 Washington Street
Problem: Probable Tank Leak
Material: Petroleum Hydrocarbons

Well-test monitoring has been conducted for this contamination source. Some gas products were found in the soil. The soil will be excavated and aerated. No contaminants in excess of state action levels have been found in the monitored wells (Richard Spitler, Planning and Public Works Director, November 21, 1989).

In addition to the sites listed above, the County of Napa, Department of Environmental Management has identified the following contaminated sites in the City limits:

Merchant Property
1506 Lincoln Ave
Problem: Tank Leaks
Material: Aviation Fuel

Calistoga Auto Body
120B Foothill Blvd.
Problem: Unknown
Material: Unknown

Bohan's Shell
1108 Lincoln Ave.
Problem: Tank Leak
Material: Waste Oil

Food and Liquor Store #168
940 Petrified Forest Rd.
Problem: Tank Leak
Material: Gasoline

Calistoga High School
1608 Lake Street
Problem: Tank Leak
Material: Gasoline

Calistoga Soaring Center
1546 Lincoln Ave.
Problem: Tank Leak
Material: Aviation Fuel

Due to the relatively small size of Napa County's existing and projected hazardous waste stream, the most feasible facilities for the County would be storage and transfer facilities. Currently no off-site treatment, storage and disposal (TSD) facilities existing within Napa County other than waste oil storage facilities located at the American Canyon Landfill, Cloverfolt Landfill, and Napa Garbage Recycling Center.

Emergency response for hazardous material/waste incidents within the County is under the guidance of the Office of Emergency Services which is staffed by the California Department of Forestry. Napa County is one of the first counties in California to organize and train a hazardous material emergency response team.

Weaknesses of the current County program include: lack of final approval and implementation of the Napa County Hazardous Materials Emergency Response Plan, lack of a Countywide hazardous material storage ordinance, limited trained rural firefighter and law enforcement personnel, lack of appropriate equipment and training on how to use it, the need to clarify the roles of participants, and the need to develop standby status for County personnel expected to respond to emergency response calls (Napa County Draft Hazardous Waste Management Plan 1988).

FINDINGS

1. The City of Calistoga with the exception of the western portion of the City is classified as an area of low fire hazard risk. The western portion of the City is classified as an area of high fire hazard risk.
2. There have been no problems with wildland fires in the last four years.
3. There are several active faults in the Bay Area region and locally in Napa and Sonoma County which may affect the City of Calistoga should an earthquake occur.
4. Generally, the risk of landslides in Calistoga is estimated to be negligible to low.
5. The City of Calistoga is at risk for liquefaction. Further study is needed to determine the location and extend of sand deposits in Napa County that are susceptible to liquefaction.
6. Encroachment on floodplains increases flood hazards. There is a need for a flood map that accurately reflects land elevations. There is community support for the preparation of this floodway map.
7. Nine sites within the City limits have been identified on the State Hazardous Waste and/or Substance Sites List or the County of Napa Department of Environmental Management List. Several wells have been investigated for any contaminants in excess of state action levels.
8. Numerous public buildings in the City's historical area would be subject to unreinforced masonry laws.



NOISE

NOISE

INTRODUCTION

Noise is commonly described as unwanted sound. Several rating scales have been developed to measure community noise. The scales account for the following:

- The parameters of noise that have been shown to contribute to the effects of noise on man,
- The variety of noises found in the environment,
- The variations in noise levels that occur as a person moves through the environment, and
- The variations associated with the time of day.

Sound levels are conventionally measured in units of decibels, abbreviated dB. When referring to dBA sound level units, the A indicates that the sound signal is electronically processed to mimic the response of the human ear before the level in decibels is determined.

Changes in sound level are roughly correlated with changes in perceived loudness. A 3 dBA increase in sound level is barely noticeable to the human ear under normal circumstances. An increase by 10 dBA is generally perceived as a doubling of loudness.

A measure of equivalent sound level is Leq. Leq is a type of average sound level. It is the level, in dBA units, of a fictitious steady state sound which would deliver the same acoustic energy during a given period of time as a time-varying, measured sound delivers during the same period.

A day/night sound level is represented as Ldn. An Ldn is the average (Leq) level, in dBA units, during a one year period which results when 10 dBA are added to sound levels measured during night time hours (10 p.m. to 7 a.m.). Ldn is a type of weighted average sound level which emphasizes noise levels measured during the more sensitive night time hours. This descriptor is used as a measure of community noise exposure in many federal, state and local noise regulations and standards.

EXISTING NOISE

Potential noise sources identified in the September 1989 study by T.A. Barneby of Sound Solutions include roadways, the Calistoga Soaring Center, Sprint Car Races at the Napa

County Fairgrounds, and Wind Machines associated with agricultural production. Exhibit 27 depicts the Community Noise Environment and plots each of the identified noise sources as well as sensitive receptors. Table UU summarizes the typical noise levels in the City of Calistoga. Each noise source is described below.

Roadway Noise

As Exhibit 27 indicates, the noise environment is dominated by motor vehicle traffic. Table VV gives the locations of the Ldn noise contours near those roadways which may be important sources of noise. The contours are based upon measurements of existing noise levels. They are nominal since they do not take into account any noise attenuating structures such as fences and buildings, which may exist in some locations.

From the positions of the roadway contours, percentages of the population of Calistoga exposed to various Ldn values have been estimated. Table WW presents the resulting inventories. As Table WW indicates, approximately 97% of the population is exposed to noise levels below the state limit for residential areas. In general, the normally acceptable limit is 60 dBA.

TABLE WW
EXISTING NOISE EXPOSURE INVENTORY

	Ldn Range (dBA)			
	<u>Below 55</u>	<u>55-60</u>	<u>60-65</u>	<u>65-70</u>
Approximate percentage of the existing population with residences exposed to noise levels within the give range.	90.6%	5.9%	3.0%	

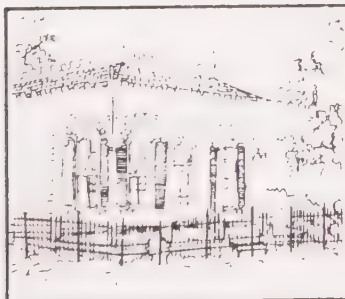
Source: Sound Solutions

Calistoga Soaring Center

The Calistoga Soaring Center is located near the intersection of Lincoln Way and Stevenson Avenue. Ldn contours due to glider tow planes at the Calistoga Soaring Center are given in Exhibit 28. These contours were developed by CALTRANS in 1983, and are expected to approximate existing conditions. The 55 Ldn contour extends the furthest. A level of 55 dBA is considered Quiet to Moderately Loud on Table UU, Typical Noise Levels Found In Calistoga.



Source: Sound Solutions



COMMUNITY NOISE ENVIRONMENT **MASTER ENVIRONMENTAL ASSESSMENT** City of Calistoga

STA inc.
no scale

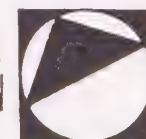


Exhibit 27

TABLE UU
TYPICAL NOISE LEVELS FOUND IN CALISTOGA

Loudness Description	Noise Level in dBA	Representative Noise Source in the City of Calistoga
THRESHOLD OF PAIN	130	
	120	
	110	Auto Horn at Three Feet Pop Music in Bar or Nightclub
VERY LOUD	100	
	90	Sprint Car at 100 Feet Wind Machine at 200 Feet
MODERATELY LOUD	80	Loud Motorcycle Cruising at 50 Feet
	70	Diesel Truck Idling at 50 Feet Tow Plane in Neighborhood Near Airfield
	60	Conversational Voice Level at Four Feet Automobile Idling at 50 Feet
QUIET	50	Typical Ldn in Quiet Neighborhood
	40	
VERY QUIET	30	Minimum Nighttime Level in Quiet Area Soft Whisper at Ten Feet
JUST AUDIBLE UNDER NORMAL CONDITIONS	20	Softly Rustling Leaves at Ten Feet
	10	
THRESHOLD OF AUDIBILITY FOR YOUNG, HEALTHY EARS UNDER LAB CONDITIONS	0	

Source: Sound Solutions

TABLE VV
EXISTING Ldn CONTOUR DISTANCES FROM ROADWAY CENTERLINE (FEET)

Roadway Segment Description	55 dBA	60 dBA	65 dBA
LINCOLN AVENUE			
Cedar-Washington	143	66	31
Silverado North	323	150	70
FOOTHILL BOULEVARD			
Dunaweal-Lincoln	285	132	61
Lincoln-Berry	261	121	56
Berry-Pet. Forest	261	121	56
Pet. Forest-Tubbs	204	95	44
SILVERADO TRAIL			
Dunaweal-Lincoln	209	97	45
WASHINGTON STREET			
Lincoln East	80	37	17
Lincoln-Berry	69	32	--
PETRIFIED FOREST			
Foothill South	181	84	39

Source: Sound Solutions

Note: Noise exposures are not expected to be significant near roadway segments not listed.



Source: Sound Solutions

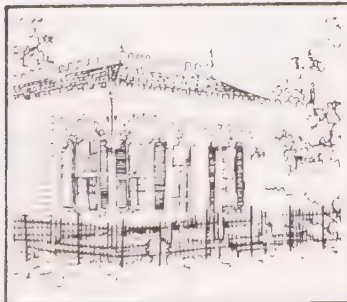
CALISTOGA SOARING CENTER **Ldn CONTOURS**

MASTER ENVIRONMENTAL ASSESSMENT
 City of Calistoga

STA inc.
 no scale



Exhibit 28



Sprint Car Races at the Napa County Fairgrounds

Sprint Car Races are isolated events, taking place on approximately five evenings each year. During the races, noise levels in the neighborhoods surrounding the fairgrounds are substantially higher than normal.

Because of their limited time and durations, Ldn (an annual average) is not an appropriate descriptor of the noise due to the races. The Leq during the event is more useful. Leq contours under typical race conditions are given in Exhibit 29. As indicated, the 60 Leq contour extends over much of the City.

Wind Machines

Several anti-frost wind machines exist in the agricultural areas zoned as Transitional Districts of the City. The intermittent and seasonal nature of their operation implies that the associated noise is best described by the Leq value during operation. The locations of Leq contours around a typical wind machine are given in Table XX.

Other Noise Sources

In the recent past, noise generated by the Calistoga Water Bottling plant has generated complaints from nearby residents. An acoustical analysis has led to resolution of the problem. Concern has also been expressed about noise produced by heavy trucks servicing the bottling plant. This potential noise source is not considered significant. The number of trips involved is small (approximately 10 per day). No truck trips occur during nighttime hours or on weekends. Under these conditions, the trucks contribute negligibly to the average noise levels due to motor vehicle traffic in general.

Complaints were received about excessive noise produced by the Crystal Geyser bottling plant when an exterior air compressor was added to existing refrigeration. A noise attenuating enclosure has resolved this issue.

FINDINGS

1. The City of Calistoga is a relatively quiet community when compared to the San Francisco Bay Area. Approximately 97% of the population lives in areas exposed to noise levels below the nominal state limit for residential areas. No heavy industrial facilities are currently located within the City. In addition, there are no heavily trafficked transportation routes.
2. Higher noise levels tend to be infrequent as in the case of the Sprint Car Races. Wind machines present a sometimes moderately loud to very loud noise source.



Source: Sound Solutions



SPRINT CAR RACE Leq CONTOURS LOCAL

MASTER ENVIRONMENTAL ASSESSMENT
City of Calistoga

STA inc.

no scale



Exhibit 29

TABLE XX

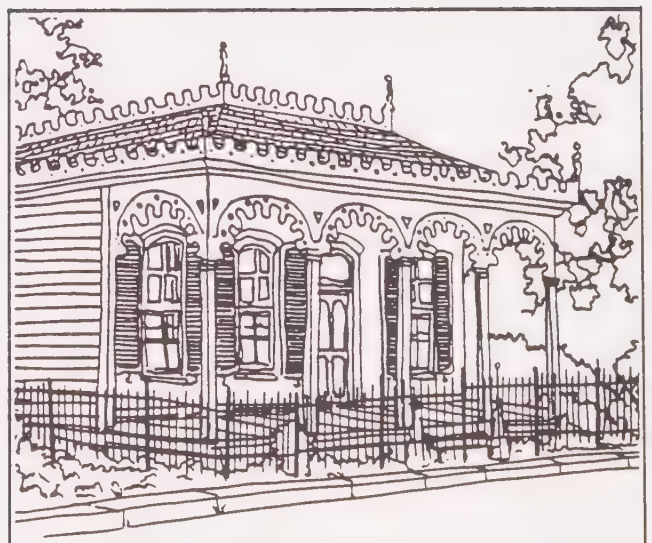
Leq CONTOURS NEAR A TYPICAL WIND MACHINE

Contour Leq (dBA)	Distance of Contour From Wind Machine (Feet)
90	126
85	224
80	400
75	710
70	1,125
65	1,782
60	2,518
55	3,170

Source: Sound Solutions

Since the County's growth management plan encourages urban development in the incorporated City's and since agricultural preserves are located outside the City, the agricultural uses in the City are anticipated to be phased out or included in very low density residential areas of the City.

3. There is an existing need for noise attenuation standards that protect sensitive receptors from significant noise generators



RECREATIONAL RESOURCES

RECREATIONAL RESOURCES

INTRODUCTION

Recreational opportunities in Calistoga are of a regional nature. Thus the region is the area of analysis for this section of the MEA. Information on recreation was gathered from the Cal Poly Informational Profile, Fall 1987. The Napa Valley and the City of Calistoga provide a variety of recreational activities. Table YY provides names and locations of the recreation facilities available in and around the City of Calistoga.

Regional Active Recreation

Calistoga offers ballooning and soaring. The Once in a Lifetime and the Calistoga Soaring Center are the two local businesses providing these services. Bicycles can be rented at one location in the City of Calistoga. Bicycle routes are located along Highway 29/Silverado Trail. Horseback riding facilities are also located within the City.

People wanting to go hiking, camping, or fishing can go to Robert Louis Stevenson State Park, Bothe-Napa Valley State Park, Spring Lake Park, or Lake Berryessa. Robert Louis Stevenson State Park is six miles north of Calistoga and has many hiking trails leading to the top of Mt. St. Helena. Spring Lake Park which is fourteen miles to the southwest of Calistoga is developed around Santa Rosa Creek Reservoir and offers sailing, fishing, and bicycle and hiking paths. Bothe-Napa Valley State Park located five miles south of Calistoga is a campground offering an outdoor pool and scenic hiking trails. Lake Berryessa is located east of Calistoga and is available for fishing and water skiing. A hiking trail along Oat Hill Trail begins near the intersection of Lincoln and Silverado continuing to Lake County.

Regional Passive Recreation

Four parks are located within the City of Calistoga. Heather Oaks and Pioneer Park contain playgrounds and picnic areas. The other two parks are Avila Memorial Park and Fireman Park.

Calistoga is at the northern end of the Napa Valley Wine Country. There are six local wineries, most of which are open daily for wine tasting. The wineries are: Chateau Montelena, Cuvaion, Robert Pecota Winery, Schramsberg Vineyards, Sterling Vineyards, and Stonegate Winery. The surrounding Napa Valley contains over one hundred and twenty other wineries.

TABLE YY
RECREATIONAL OPPORTUNITIES

Recreation	Location
Ballooning	Adventures Aloft, Yountville
Bicycle Rentals	Jules Culver Bicycles, Calistoga
Campgrounds	Bothe-Napa Valley State Park Calistoga Ranch Campground, Calistoga Napa County Fairgrounds, Calistoga
Golf	Mt. St. Helena Golf Course, Calistoga County Fairgrounds
Hiking	Bothe-Napa Valley State Park Robert Louis Stevenson State Park Spring Lake Park Oat Hill Road Trail
Horseback Riding	Oakhill Stables, Santa Rosa Petrified Forest Stable, Calistoga
Picnicing	Pioneer Park, Calistoga Bothe-Napa Valley State Park Robert Louis Stevenson State Park Old Faithful Geyser Petrified Forest Heather Oaks Park
Spectator Events	Napa County Fairgrounds, Calistoga N.A.R.C. Sprint Races, Calistoga
Swimming	Indian Springs, Calistoga Calistoga Spa Hot Springs, Calistoga Golden Haven Hot Springs, Calistoga

Source: Cal Poly SLO Information Profile, Fall 1987.

Other notable recreational features and activities within this region include the Old Faithful Geyser, The Petrified Forest, Russian River, Sharpsteen Museum, Napa Valley County Fair, and the N.A.R.C. sprint car races.

City of Calistoga Recreation

The biggest recreational draw to the City of Calistoga is the natural hot springs. There are several spas, many of which have pools open to the public for swimming. The Monhoff Recreation Center provides four tennis courts and two racquetball courts available for day and night play. The recreation center also provides classes such as aerobics, crafts, dancing, and movies for the residents of Calistoga. Also located on the Napa County Fairgrounds, is the Mt. St. Helena Golf Course. This is a public nine hole golf course.

FINDINGS

1. The Napa Valley offers a variety of active and passive recreational uses including, ballooning, bicycling, horseback riding, gliding, golf, hiking, picnicing, spectator events, and swimming.
2. The City of Calistoga's biggest recreational draw are the natural hot springs. The City also provide tennis and racquetball courts for day and night play.
3. Oat Hill Trail Road should be preserved and maintained for public use.



CULTURAL RESOURCES

CULTURAL RESOURCES

HISTORIC RESOURCES

American Indians

The earliest recorded history tells of six Indian groups living in the Napa Valley. When settlers first appeared on the scene, they estimated that about three to six thousand Indians lived in the valley. The Indians living in the valley were part of the Pomo who were the southern branch of the Yuki. Indians living below the rugged range of mountains near the hot springs were called the Mayacmas. Other spellings of the Indian names have been used in the past.

The Indians living in the valley were largely nomadic, making their homes near waterways, shifting in small groups with the game and the seasons, leaving behind the ashes of their homes and their dead and other artifacts. This accounts for the many Indian mounds found in the area, as well as the abundance of obsidian arrowheads, mortars and pestles and other articles.

Indians came from different areas following a trail along the eastern rim of the valley from the north over Mount St. Helena to come to trade for cinnabar and for the curative waters and mudbaths.

Spanish Settlers

When Spanish explorers and friars entered the upper Napa Valley in 1828, probably several thousand Indians were encamped throughout the valley and foothills, mostly along streams and rivers. The Spanish "discovered" a small, isolated volcanic tuff knoll with many hot springs and probably some small geysers at its base several hundred feet to the south and east. They called the place "Agua Caliente". In a succession of names, the surrounding area was called the Agua Caliente District, Hot Springs, Calistoga Springs, and eventually, Calistoga. The meadow containing the hot springs was often called the Springs Ground.

Settlers

The first settlers came in the mid-1840's with the encouragement of Dr. Edward T. Bale and George Yount. George C. Yount, an American, settled in the upper Napa Valley in 1831, endowed with a Spanish grant of land in 1836 from General Mariano Guadalupe Vallejo. Dr. Edward Turner Bale was awarded a land grant from General Vallejo in 1841. Dr. Bale's grant included present day St. Helena and extended northwestward to encompass the present day Calistoga City limits and all the valley lands out to the foothills that enclose the upper Napa Valley.

John T. York, arriving in 1845, built the first cabin within Calistoga near the present junction of Foothill Blvd. and Lincoln Avenue. Emigrant wagon trains began arriving in the years 1846-48.

Calistoga was founded by Sam Brannan. Brannan was California's first millionaire land developer and was also the publisher of San Francisco's first newspaper. Brannan recognized that the area's abundance of mineral springs and moderate climate would make Calistoga a prime location for a resort. In 1857 Brannan purchased a square mile of property near Mt. St. Helena with the intention of developing the land into a resort town for the wealthy. The resort was intended to rival the splendor of Saratoga, New York's famous resort town for the wealthy. Hence the origins of the City's name, the Saratoga of California, Calistoga.

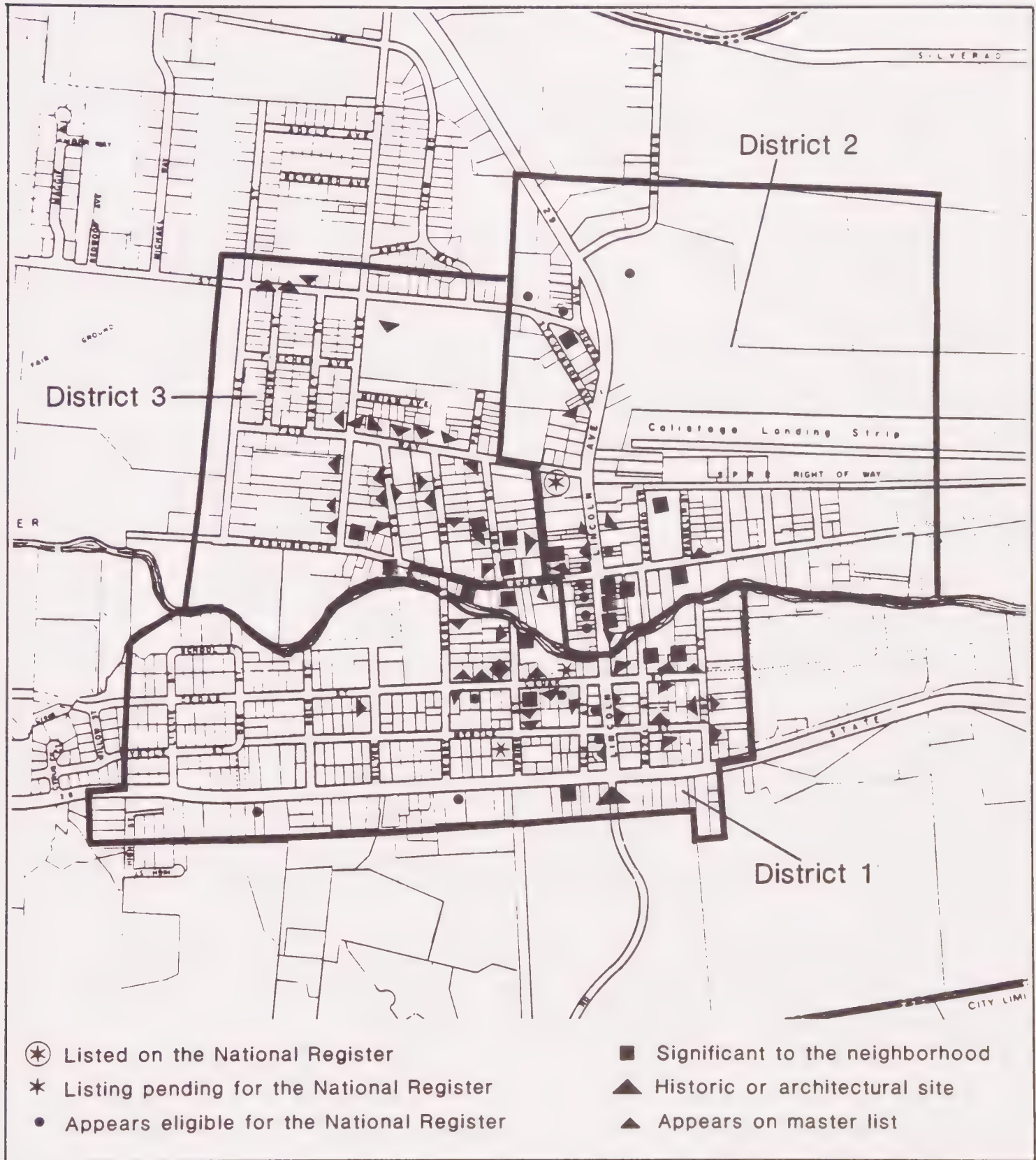
The discovery of gold in the Sutter Creek area had little direct impact on the Calistoga area. Although by 1859, approximately 2,000 dollars a day in silver was being brought up from the mine in and around Silverado City. Through this period, agriculture continued to be the primary activity in the area. With the creation of the Napa Valley Railroad Company in 1864, Calistoga began to draw many more wealthy patrons from the bay area. it was one of these wealthy patrons, George Balden Crane, who is credited with having introduced viticulture into the Napa Valley. Gradually, by the 1870's, wine-making replaced dairying as the areas primary agricultural use. The City of Calistoga was incorporated in 1886.

Historical Landmarks

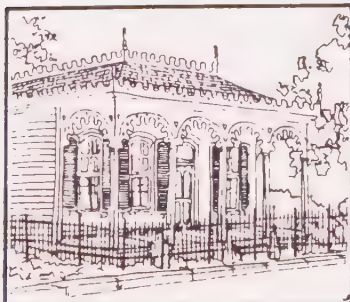
The Napa County Historic Resources Inventory, Cities of Calistoga and Yountville Volume, identifies three historic districts within the City: Foothill, Hot Springs, and Lake. Exhibit 30 depicts the boundaries of the districts.

The Foothill District, adjacent to Foothill Boulevard, is primarily residential. Streets are marked by simple carpenter - builder character of the 19th Century Greek Revival, Gothic Revival, Queen Anne and vernacular cottages. Several residences in the district were formal residences of several early Calistoga merchants.

The Hot Springs District includes Lincoln Avenue, the town's commercial thoroughfare. Few stone and brick buildings have survived from the 1880s and 1890s due to several devastating fires. The remnant buildings of this period provide a unique historical character to the downtown and "have a strong impact on the busy streetscape" (Historic Resources Inventory 1978). These buildings are important to the downtown character, and hence the City's economy which is partially dependant on tourism. It is anticipated that a design district plan will be proposed for the downtown area (Richard Spitler, Planning and Public Works Director, November 7, 1989).



Source: Napa Landmarks Inc.



HISTORIC LANDMARKS

MASTER ENVIRONMENTAL ASSESSMENT

City of Calistoga

STA inc.

no scale



Exhibit 30

The Lake District, primarily residential, reflects the growth of the City from the turn-of-the-century to the present. Homes of the Greek Revival, Queen Anne, and Bungalow styles are scattered throughout. The Craftsman influence of the early 1900s is seen throughout the district.

The Napa Valley Railroad Calistoga Depot located at Lincoln Avenue and Fair Way is on the National Register of Historic Places. It was built in 1868 when it was authorized to extend the Napa Valley Railroad to terminus in Calistoga.

There are two sites that are pending for inclusion on the National Register. "The Elms" or the Palmer House, located at 1300 Cedar Street, was owned by Judge Augustus C. Palmer, Calistoga's first Judge. The Second Empire style house was built in 1874.

The Francis House, located at 1403 Myrtle, was owned by James H. Francis, the owner of a mercantile store on the corner of Lincoln and Washington and owned several ranches in the area. The Second Empire style house was built in 1886. In 1918, the house was converted to a hospital and served as Calistoga's hospital until 1964.

There are several additional historic landmarks throughout the City of Calistoga that were built in the late 1800's and early 1900's. For a complete list of additional landmarks consult the Napa County Historic Resources Inventory (Cities of Calistoga and Yountville Volume) prepared by Napa Landmarks, Inc.. Exhibit 30 depicts the locations of historic landmarks in the City.

Archival research provided by the California Archaeological Inventory indicates that there is one recorded historic archaeological site within the study area. In addition, Calistoga contains 5 properties listed on the National Register of Historic Places, 7 properties listed on the California Inventory of Historic Resources, and 6 California Historical Landmarks. Much of the area surrounding Calistoga has not been surveyed for historic resources and there is a high probability of additional historic archaeological and architectural resources.

The Office of Historic Preservation has determined that buildings and structures 45 years or older may be of historic value. Prior to the commencement of project activities, material and context alteration should be avoided until a cultural resource consultant has evaluated the situation. Potential historic resources include stone or adobe foundations or walls; structures and remains with square nails; and refuse deposits often in old wells and privies (letter, Brian Terhorst to STA Planning, Inc., October 9, 1989).

As described in the Health and Safety section, the 1986 URM law requires identification and abatement of unreinforced masonry buildings determined to be seismically unsafe. Historic buildings are exempt from identification requirements, but are encouraged to be included in mitigation programs. Buildings at risk of seismic damage are likely to be

public buildings located within historic areas of the City (Richard Spitler, Planning and Public Works Director, November 7, 1989).

ARCHAEOLOGICAL RESOURCES

Review of records and literature by the California Archaeology Inventory indicates that the study area contains 20 recorded prehistoric archaeological sites (letter Brian Terhorst to STA Planning, Inc., October 9 and October 13, 1989). In addition, there is one record of a prehistoric cultural resource site within the study area which has not been formally recorded. Seven additional cultural resources have been identified immediately adjacent to the project area. Overall, less than 15% of the study area has been studied for the presence of cultural resources. Table ZZ provides a list of the sites located in the Calistoga study area as well as their contents. In order to prevent vandalism and artifact hunting, and trespassing, the locations of the sites are kept confidential. California Government Code Section 6254.10 exempts archaeological site information from the California Public Records Act which requires that public records be open to public inspection.

In the Calistoga area of Napa Valley, prehistoric archaeological sites are generally located along seasonal and/or perennial watercourses, at or near vegetation ecotones, and at the base of foothills. The unsurveyed portions of the study area contains these environmental features and there is a high probability of additional prehistoric cultural resources in these areas.

Since the study area contains numerous prehistoric resources and since there is a high probability of additional such resources, archival and field study is recommended prior to the implementation of projects involving or leading to ground-disturbance. Potential prehistoric resources include chert or obsidian flakes, projectile points, mortars, and pestles; and dark friable soil containing shell and bone dietary debris, heat-affected rock, or human burials.

FINDINGS

1. The City of Calistoga reflects its rich history. The architectural styling of the buildings further suggests this orientation to history.
2. The City should ensure adequate development opportunities while preserving the environment and historical quality. Prior to material or context alteration, potential historic sites should be evaluated.
3. Calistoga contains numerous archaeological sites as well as potential sites. Prior to ground disturbance the presence of archaeological artifacts should be investigated.

TABLE ZZ

PREHISTORIC AND HISTORIC SITES

Site Trinomial	Site Type
CA-NAP-172	Large village
CA-NAP-338	Midden w/ burials
CA-NAP-359	Large midden
CA-NAP-362	Midden (200' diameter)
CA-NAP-377	Midden with lithics
CA-NAP-401	Camp site w/ midden
CA-NAP-424	Midden
CA-NAP-480	Village site
CA-NAP-481	Habitation/camp site w/ midden
CA-NAP-533	Midden
CA-NAP-547	Ashy midden (30m. diameter)
CA-NAP-628/H	Sparse lithic scatter c. 1870's historic debris
CA-NAP-632	Dense obsidian scatter
CA-NAP-688	Moderate obsidian scatter
CA-NAP-703	Sparse lithic scatter
CA-NAP-719	Sparse obsidian scatter
CA-NAP-721	Light obsidian scatter
CA-NAP-729	Small mound
CA-NAP-731	Moderate obsidian scatter
CA-NAP-748/H	Sparse lithic scatter and historic scatter

Source: California Archaeological Inventory, October 1989

4. The Historic Downtown area is at risk of earthquake damage since several buildings are constructed of unreinforced masonry materials. Some public buildings may require inspection and abatement per the 1986 URM Building Law. Historic structures are important to the downtown character and, hence, the City's economy, which is partially dependant on tourism.



REPORT PREPARATION RESOURCES

REPORT PREPARATION RESOURCES

PREPARERS AND CONTRIBUTORS TO THE REPORT

Preparers

STA Planning, Inc.

Fred Talarico
Jaime C. Maldonado
Lisa Reynolds
Julie Blakeslee
Jonathon Stern

Contributors

Traffic

Allan G. Tilton, P.E.
Consulting Traffic Engineer

Noise

T.A. Barneby, Ph.d.
Sound Solutions

PERSONS AND ORGANIZATIONS CONTACTED DURING THE PREPARATION OF THIS REPORT

City of Calistoga

City Staff

Richard Spitler
Jo Noble

City Council

Diane Barrett
Robert Beck

County Staff

James O'Loughlin
Will Selleck

Agencies/Other

ABAG

Ray Brady

Beck and Taylor, Napa Valley Realty

Robert Beck

California Dept. of Conservation

Office of Land Conservation
Division of Oil and Gas

Emily Kishi
Kenneth F. Stelling

California Energy Commission

Mike Smith

California Native Plant Society

Joe Callizo

Calistoga Fire Department

Mark Thomas

Calistoga Housing Department

Pat Rusch

Calistoga Joint Unified School District

John Burke

Calistoga Police Department

Sergeant Neill

Calistoga Public Works

Robert Schneider
Steve Anderson

Calistoga Soaring Center

Erik Striedieck

Calistoga Spa

Diane Barrett

Community Presbyterian

Earnest Volkman

HAND

Soledad Rameriz

Mt. St. Helena Realty

Marilyn McCoul

Napa City/County Library System

Leslie Chamberlain

Napa County Land Trust

John Hoffnagle

Napa County Welfare Office

Lynn Perez

Napa County Rental Information and
Mediation Department

Maria Rodrequez-Welch

Napa Valley Housing Authority

Marjorie Farr
Dave Dickson

Napa Valley Ecumenical Housing

Bob McCue

Saunders Real Estate

Jim Saunders

State Department of Fish and Game

Allan Buckmann

State Department of Mines and Geology

Kit Custis

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APPENDIX A

GENERAL PLAN UPDATE ISSUES AND OPTIONS PAPER

CALISTOGA GENERAL PLAN UPDATE

February 6, 1989

PRELIMINARY ASSUMPTIONS AND ISSUES IDENTIFICATION

Introduction

The City Council has directed the Planning Department to prepare an update to the existing Calistoga General Plan which was first adopted in 1977. As the beginning step, the assumptions and planning issues facing Calistoga must be identified. An "assumption" is a statement that reflects a given attitude that the community has toward physical development in the future. These assumptions will strongly influence the City's selection of its planning goals and the direction of the general plan. An "issue" is defined as an important unsettled community problem that is associated with the City's physical development.

Presented below is a list of assumptions adopted by the City Council on February 6, 1989. These assumptions serve to guide preparation of the general plan and provide a preliminary list of issues organized by each of the elements of the general plan. The assumptions and issues are presented to the public, Planning Commission and City Council so that we may reach a consensus as to the important problems the City faces over the next twenty years. With this guidance, the data collection and analysis process can begin for the general plan update. This will lead to the end product: An updated general plan with goals, objectives, policies, and action plans designed to solve the problems we have identified.

The issues presented in this document were largely derived from the General Plan Citizen's Advisory Committee reports, the Cal Poly Background Report, and Draft General Plan, and the 1977 Calistoga General Plan. In addition, the public and Planning Commission provided review and comment.

Undoubtedly, these assumptions and issues will be refined, amended, added to, or even deleted as more and better information becomes available. The precise wording of each issue is not so important as getting the idea across. Remember, these issues are within the context of a 20 year time horizon. We ask that you review the list and make your own notes, changes and additions and then let your representatives on the Planning Commission, Council or the Planning Department see what you have accomplished.

Assumptions

1. The quality of life that Calistoga offers as encompassed in its friendly, rural, small town atmosphere must be maintained and enriched.

2. Calistoga's distinctive and quality natural environment shall be conserved.
3. Establish a diverse economy that creates stable jobs for local residents, maintains Calistoga's tourist attraction, but does not despoil the environment or stress the City's infrastructure.
4. Set ultimate population levels and manage population growth to ensure that it does not create adverse impacts to the City's infrastructure, community services, fiscal resources, natural environment and quality of life.
5. Provide a jobs and housing relationship that satisfies local need for housing types and affordability.
6. Preserve and enhance the historic character of Calistoga.
7. Calistoga is a small town of only 2.5 sq. miles and has a population of 4,300 surrounded by agricultural preserves. This places a limit on future growth and the nature of development we can expect over the next 20 years. Unless annexations were to be considered, Calistoga has a finite growth boundary. However, land use activities on adjacent County lands may affect Calistoga residents and vice versa. For this reason the study area for the Calistoga General Plan will extend beyond the immediate city limits (See attached map).
8. Respect the County's agriculture preserve policies for its productive lands and allow for compatible agricultural uses for rural residential lands within the City limits.
9. The Calistoga General Plan shall address locally relevant physical, social and economic planning issues through the year 2010.
10. State, Regional and County planning issues and activities shall be addressed in the Calistoga General Plan as they relate to local issues of concern.

LAND USE ELEMENT

The Land Use Element designates the general distribution and intensity of uses of the land for housing, business, industry, open space, education, public buildings and grounds, waste disposal facilities, and other categories of public and private uses.

State Mandated Issues:

- Distribution of housing, business, and industry;

- Distribution of open space, including agricultural land;
- Distribution of mineral resources and provisions for their continued availability;
- Distribution of recreation facilities and opportunities;
- Location of educational facilities;
- Location of public buildings and grounds;
- Location of future solid and liquid waste facilities;
- Identification of areas subject to flooding;and,
- Identification of existing Timberland Preserve Zone lands.

Local Issues:

Environment/Open Space/Agriculture:

1. Certain areas are environmentally sensitive, i.e., riparian corridors, geothermal marshes, knolls and hillside areas which help give Calistoga its unique character. Specific policies must be made to protect them from diminishment.
2. There are increased pressures to develop the hillside areas of Calistoga. What measures are needed to insure slope stability, soil erosion, viewsheds are retained, and vegetation and wildlife communities are minimally impacted?
3. There is need for planning mechanisms that insure that high density development does not adversely impact adjacent uses with a lower intensity development.
4. County lands used for agricultural purposes should be maintained for such purposes.
5. Landscaping is not required by code for commercial development. Should it be prescribed?
6. The City has five major entrances from the regional road network. The appearance of these entrances gives an important first impression of the City. How can these areas be designed, and developed to enhance the image of Calistoga?
7. There need for an abatement program to rid the town of unsightly junk, weeds, abandoned autos that detract from the image of the community.

8. New growth must respect environmental systems and not detract from the small town atmosphere.
9. Current building height regulations may result in heights inconsistent with the City's small town atmosphere.
10. Should there be a scenic highway designation for Hwy 29 and 128 and Silverado Trail?
11. Development, both residential and commercial, will result in loss of open space and agricultural lands.
12. Open space should be managed in an orderly manner.
13. View corridors, scenic highways, or areas between neighborhoods or uses of difference intensity should be transitioned appropriately.
14. The City's flood plain map may not reflect actual flooding and needs to be revised.

Historic:

1. Calistoga still retains its historical character although it is being slowly diminished by attrition and new development that is out of character.
2. With new development occurring, the possibility exists that it may conflict with the historic district. Is there need for design or architecture review? Should growth be aesthetically controlled?
3. Old stone bridges are a part of Calistoga's heritage. How can they be preserved as the City grows?

Population/Growth Management:

1. What should be the ultimate population of Calistoga at the end of a 20 year time horizon or a full build out of the plan?
2. Through its Resource Management System the City has attempted to set a prescribed growth limit of 2-3%. Is this mechanism as effective as we need it to be? Are there other approaches to enhance or to improve this system?

Infrastructure:

1. New development receives approval before needed improvements to existing infrastructure (sewer and water) are in place. Sometimes it uses up the system reserve.
2. A major limitation to the City's sewer treatment plant is getting rid of the treated effluent during the dry months. Spray irrigation sites are needed to accommodate existing and future needs.
3. The sewer treatment plant creates odors which is bothersome to adjacent users and may limit uses.

Public Buildings and Services:

1. The City has two water sources owned by the City: Kimball Dam and Fiege Wells. These areas should be managed to protect the long term viability of these water sources; however, other uses may be considered to promote public use and enjoyment.
2. There is need for additional parks both for neighborhoods and for the general public.
3. City functions are in several different buildings: Should they be consolidated in one location with easy access and with multiple use functions?
4. There is need for a new police facility.
5. There will be need for a fire substation on the west side of Calistoga.
6. The library needs upgrade and expansion.
7. There is need for a public swimming pool for school and recreation.
8. Senior citizens have need for a center to have social and fund raising activities.
9. There is need for recreational programs for senior citizens.
10. Calistoga's population is predominately senior citizens which creates needs and demands for services unique to this stage of life. Many, because of fixed income, cannot easily pay for the cost for increased services caused by new development or inflation.

11. Increased number of young families will require new school sites and better facilities.
12. A recent influx of young families creates immediate and pronounced demands for added services. As these families mature the demand will change.
13. Calistoga's isolated geographic location makes it difficult for children, teens and young adults to have access to facilities and services needed for a positive lifestyle. Can a center with programs be created to serve this group?

Tourism:

1. The amenities that attract the tourist (historic, small town character) are unique and fragile. However, they are threatened by the tourist industry as it develops additional land.
2. Tourism competes with the small town atmosphere in the form of traffic congestion, parking and competition for retail and service economy.
3. Calistoga runs the risk of a saturation of visitor oriented services and accommodation businesses to the detriment of all concerned.
4. The Wine Train may extend up to Calistoga, the traditional destination point of the Napa Valley Railroad. How should Calistoga deal with this?
5. Calistoga is a resort community with a draw predominately based on geothermal and wine making. These resources and industries must be protected to insure tourism and retention of jobs locally.

Land Use Mix and Options:

1. There is need to achieve a commercial sector balance so that the City's business district does meet resident oriented demand for goods and services and there is not additional loss of local serving business to tourism.
2. There is need for additional heavy commercial and light industrial land.
3. Calistoga is largely identified with its historic downtown. There is pressure to create satellite commercial areas and strip commercial which may detract aesthetically from the "downtown" image and may rob Calistoga resident perceptions of where the center of town is.

4. Calistoga has vacant land within existing serviced areas. How can it be encouraged to develop this land before going outward?
5. Calistoga needs a balance of residential, commercial, industrial and public land.
6. Calistoga has much land that is undeveloped and in transitional and planned development zones: Should it go commercial or residential?
7. In considering commercial land use decisions, it must carefully determined what types of uses are allowed and where they are to be located to get balanced economy.
8. Current commercial land use patterns reflect tourist oriented uses. Is this to be continued, or is there need for a more deliberate effort to control ultimate land use?
9. Is conversion of residential housing stock to commercial uses desirable?
10. In certain areas, multi-family and professional offices are allowed in older neighborhoods. Is this desirable?
11. Certain areas are blighted. What means are there to renew the appearance and use of these properties?
12. There is pressure to leapfrog development prior to planned expansions of sewer, water and road systems.
13. The possibility exists that franchises and fast food chains may want to locate in Calistoga. What are the City's options? What can be done about it?
14. Location, development and amount of volcanic ash necessary for mud baths. Does this need to be managed?
15. The airport property is likely to be sold and undergo new development. How can this property be developed in a safe manner, retaining the airport use but minimize noise, and safety impacts?
16. Foothill Blvd. between Lincoln Avenue and Petrified Forest Road has several multi-family land uses adjacent to it. Should the zoning be changed from R-1 to R-3?

Regional/County Policies and Activities:

1. The San Francisco Bay region demands and impacts (housing and air quality) threaten the small town character of Calistoga.
2. County land use decisions on adjacent properties can have a profound effect on Calistoga. How can the City monitor these actions and make sure our concerns are incorporated into the decision-making process?
3. Should an urban reserve line be set between the small lot subdivision and rural one acre lots within the City?. Is there a conflict between City's allowable density of development and the County agriculture zoning practices?
4. The County Fairgrounds occupy a significant land area in the middle of the residential areas of the City. As the fairgrounds continue to grow, diversify its programs and services to locals and the region, how is the City to ensure that it is done in conjunction with local plans and policies?
5. Calistoga is experiencing growth pressure from the Bay area which has caused land and housing values to sky rocket leaving local residents at local wages unable to compete.

CIRCULATION ELEMENT

The Circulation Element consists of the general location and extent of existing and proposed major thoroughfares, transportation routes, terminals, and other local public utilities and facilities, all correlated with the land use element.

State Mandated Issues:

- Major thoroughfares
- Transportation routes
- Terminals
- Other local public utilities and facilities

Local Issues:

Traffic Congestion and Parking:

1. Lincoln Street traffic congestion principally between Stevenson Street and Foothill Boulevard.
2. Need for public parking downtown.
3. Downtown parking encroaches onto residential streets creating competition between tourist and resident.
4. Truck traffic downtown (First Street, Highway 29, Foothill Boulevard, and Washington Street).
5. Lack of easy access to stores for delivery trucks necessitating double parking.
6. Seasonal impact of fairgrounds traffic and parking on local streets.
7. Abandoned vehicles parked on City streets.
8. Certain high density residential neighborhoods do not have adequate parking off the street. This results in a significant number of vehicles being parked on City streets.

Vehicle and Non-vehicle Safety:

1. Some existing streets do not meet safety design standards or are in need of proper signage to minimize safety hazards.
2. Intersection design and signalization is substandard in certain areas, and financing to correct the situation is not readily available (Silverado and Highway 29; Petrified Forest and Highway 128; Rancho de Calistoga and Highway 128).
3. Deteriorating streets, curbs, gutters and sidewalks.
4. No funds to finance street maintenance and development.
5. Street lights are lacking in certain areas.
6. Visible street addresses are not present making it difficult for emergency vehicles to locate property.
7. Elimination of diagonal parking on Lincoln Avenue (Highway 29).

8. Old stone bridges were not built to handle two way traffic and present traffic volumes.
9. Lack of pedestrian walkways and bike paths and presence of open drainage ditches adjacent to busier streets creates a safety problem.
10. Presence of sandwich signs and planters in downtown pedestrian sidewalks.
11. Truck traffic on Foothill Blvd and Dunaweal causes problems. Should alternative routes be considered?

Street Standards and Policies:

1. Rural versus urban street standards (width, development requirements, sidewalks, etc.)
2. Hillside road standards (grade, width, improvement requirements).
3. Cul-de-sac development policies (width, length, when required).
4. Fire safety street standards (width and development requirements).
5. Public versus private streets. When does the City want a dedication?
6. Flag lots: should they be permitted in rural or hillside areas to access City streets?

Street Planning:

1. No hierarchy of City streets, i.e., which are arterials, collectors, and local streets?
2. Development of an efficient traffic grid system for Calistoga. What streets should be extended in the future (Money Lane, South Washington Street, S. Fairway Street, Oak Street across the Napa River, Mitzi Drive, Greenwood Avenue, S. Washington across Napa River to Hwy. 29, etc.)?
3. Expansion of memorial street lights program.
4. Determination of status of Morgan Map street rights-of-way and policies for abandonment if desired.
5. Southern Pacific right-of-way use and development.

6. County-maintained roads adjacent to City limits.
7. Rerouting of Hwy 29 around downtown Calistoga (Dunaweal, Tubbs Lane, Larkmead)?
8. Regional demand and improvement plans for Hwy 29, Silverado, 128 and Petrified Forest Road.
9. No capital improvements plan to designate which streets are to receive attention first and sources of financing.

Pedestrian and Transit Needs:

1. Retaining Calistoga's pedestrian orientation.
2. Lack of pedestrian walkways and sidewalks that are linked to serve the entire community.
3. Pedestrian cross-walks on busy streets.
4. Need for bicycle paths within City rights-of-ways that are linked to serve the entire community.
5. Bicycle touring from city to city is popular in Napa Valley. How can Calistoga contribute?
6. Private bus terminals and routes, public taxi service: are they adequate?

Utilities:

1. Coordinating location and undergrounding of private utilities (electric, telephone, cable, gas) to coincide with future City land use and capital improvement plans.
2. Geothermal heating district, lines, production and distribution: How and where should it be developed?

Water Availability:

1. Coordinate timing and location of water line expansion with land use policy.
2. Quantity of water for future uses: Where will it come from, when will it be available and how is it to be paid for?

3. Deteriorated water distribution system.
4. Lack of funds to meet water expansion and existing repair needs.
5. Controlling water consumption of existing users.
6. Management of Resource Management System to ensure control over water allocation.

Sewer Treatment:

1. Coordinating timing and location of sewer lines expansion with land use policy.
2. Commercial and industrial users placing boron, increasing the pH and BOD demand of sewer influent.
3. Controlling sewer generation by commercial and industrial users.
4. Deteriorated collection system for sewer.
5. Limits of the sewer treatment plant capacity and demand on system: What is the desired level of expansion and how is it to be paid for?
6. Getting rid of treated effluent during the dry, summer months.
7. Lack of funds to meet expansion needs.

Drainage:

1. Poor drainage systems (open ditches and over capacity) in certain areas of town.
2. Lack of drainage systems for parts of City.
3. Lack of drainage management plan and capital budget.

Airport:

1. Existing airport safety and how this can be enhanced.
2. The airport may expand or have new developments in the future. How can this be accomplished in a manner which minimizes noise and safety impacts?

Tourism:

1. Tourism impacts on City roads, public parking, sewer, and water.
2. Wine train accommodation: What is the City's position if desired to extend to Calistoga?
3. Conflict between tourism traffic and wine industry on regional road system.

Vehicle Air Pollution:

1. Air pollution from local vehicles, Sonoma County and San Francisco Bay region.

HOUSING ELEMENT

The Housing Element shall consist of an identification and analysis of existing and projected housing needs and a statement of goals, policies, quantified objectives, and scheduled programs for the preservation, improvement, and development of housing. The housing element shall identify adequate sites for housing, including rental housing, factory-built housing, and mobilehomes, and shall make adequate provision of the existing and projected needs of all economic segments of the community.

State Mandated Issues:

- Assessment of immediate housing needs.
- Projected new construction needs.
- Analysis of existing and potential sites for housing of all types in the jurisdiction.
- Assessment of actual and potential governmental and non-governmental constraints on the maintenance, improvement, and development of housing for all income levels.
- Analysis of the opportunities for energy conservation in residential development.

Local Issues:

Housing Needs:

1. Affordable housing for those people who live and work here to meet all income levels.

2. Low vacancy rate for rental housing (single family and multiple family) causes monthly rates to be high.
3. Overcrowded housing. Number of person per house exceeds accepted standards especially during grape crush season.
4. Need for a housing mix in the community to satisfy local demand, i.e., sufficient rental housing, homes available for purchase; and, type of housing whether single family detached or multifamily attached.
5. There is presently a housing shortage for buyers and renters. What housing units are on the market, local residents must compete with out-of-town investors.
6. Loss of housing stock to transient users such as Bed and Breakfast.
7. Housing for farmworker and other low salary jobs is lacking in Napa Valley. What should Calistoga's contribution be?
8. Housing rehabilitation can keep homes in the housing stock. How can this be encouraged?
9. Calistoga has a large retirement population. Is there sufficient types housing for the special needs of this segment of the population now and in the future?
10. Difficult to find land for affordable housing.
11. Conversion of residential structures to commercial uses.
12. Infrastructure limitations (roads, drainage, sewer, and water) to residential development in certain areas of the City.

Retaining Residential Character:

1. How can the City work to retain neighborhood character especially in older neighborhoods?
2. Existing building heights regulations can allow new developments to be incompatible with existing residential structures.
3. Commercial and industrial designations are sometimes located such that they will impact residential land uses.

4. Require insulation between low and high density neighborhoods of differing intensity.
5. Leapfrog development can occur if policies concerning expansion of sewer and water lines and road systems are not articulated and followed.
6. Residential developments can diminish physical and environmental amenities which drew people here in the first place.

Planning for Housing:

1. Hillside design standards are not present to protect viewsheds and environmental concerns.
2. Housing impact fee for new businesses is not in effect to help house employees for low salaried positions.
3. Infrastructure timing often times is not coordinated with residential land use decisions.
4. How can in-fill of existing vacant lots be encouraged?
5. What is the proper balance between land set aside for residential development and that set aside for commercial and industrial uses?
6. Calistoga has a limited land area. Existing zoning primarily calls for low density residential development. How can Calistoga achieve affordable housing which usually needs high density development and still retain the large lot open space feeling?
7. Finding funds or other incentives for affordable housing.
8. Regional housing needs determination by the Association of Bay Area Governments. Is it possible to meet their objectives?
9. Regional growth pressures bring investors which inflate housing values. What can Calistoga do about it?
10. Inclusionary zoning should be considered to require subdivisions to set aside affordable housing.

CONSERVATION ELEMENT

The Conservation Element is for the conservation, development, and utilization of natural resources including water and its hydraulic force, forests, soils, rivers and other waters, harbors, fisheries, wildlife, minerals, and other natural resources.

State Mandated Issues:

-Water and its hydraulic force.

-Forests.

-Soils.

-Rivers and other waters.

-Fisheries.

-Wildlife.

-Minerals.

-Other Natural Resources.

Local Issues:

Conservation and Resource Development:

1. The natural environment (riparian corridors, forestlands, agricultural lands, ground water recharge areas, geothermal resource, groundwater) and Calistoga's image are inseparable. Can Calistoga accommodate development and still retain its open space feeling?
2. Loss of agricultural land and abandonment. Development pressures have made agricultural uses secondary.
3. Geothermal marshes are unique plant communities to Calistoga. How can they be protected?
4. Watershed protection to ensure a good water supply and to prevent soil erosion and flooding. However, much of this land is outside the City limits.
5. Tree preservation especially oak and historic trees.

6. Wildlife is diminishing as open lands are developed.
7. Calistoga's creeks and rivers do not support the fisheries that they once did. Should this resource be enhanced?
8. Urban development is encroaching on creeks/river frontages.
9. Creek and river water has been polluted.
10. Geothermal use has increased the levels of boron into creeks/rivers. Is this acceptable?
11. Increased geothermal use has resulted in heightened boron concentrations into the treated sewer effluent that is spread upon the land. Will there be a need to reclaim this land?
12. Hillside development increases soil erosion potential. How can this be prevented?
13. Increased geothermal use may result in overdraft and contamination of the reservoir.
14. Air quality has deteriorated due to increased auto traffic both locally and in the region.
15. Hazardous wastes produced locally need to be properly disposed of.
16. Land fill (solid waste) must be properly disposed of now and in the future. How is the City to get rid of its sewer treatment plant sludge?

Utilization of Resources:

1. Stream and river reclamation to enhance fisheries and public use.
2. Volcanic ash is used for the spas. Is there need to manage land for conservation of this resource?
3. Geothermal power and heating production and water consumption. What uses are to be allowed and how are they to be managed?
4. Agricultural uses have been allowed in the rural residential zones. Should this practice be continued or extended to other land use designations?

Safety:

1. The Napa River has a 100 year flood plain. What flood control measures are necessary to minimize property damage and to protect the health and safety of residents. Are there map changes which are necessary?
2. Kimball Dam could fail during a seismic event. Could this inundate Calistoga? What measures are needed to protect residents?

OPEN SPACE ELEMENT

The Open Space Element is a plan for the comprehensive and long-range preservation and conservation of "open-space land." "Open space land" is defined as any parcel or area of land or water that is essentially unimproved and devoted to open-space use.

State Mandated Issues:

-Open space for the preservation of natural resources including, but not limited to:

Areas required for the preservation of plant and animal life including habitat for fish and wildlife;

Areas required for ecologic and other scientific study;

Rivers, streams, bays and estuaries; and,

Coastal beaches, lakeshores, banks of rivers and streams, and watersheds.

-Open space used for the managed production of resources, including but not limited to:

Forest lands, rangeland, agricultural land and areas of economic importance for the production of food or fiber;

Areas required for recharge of ground water basins;

Bays, estuaries, marshes, rivers and streams which are important for the management of commercial fisheries; and,

Areas containing major mineral deposit, including those in short supply.

-Open space for outdoor recreation, including but not limited to:

Areas of outstanding scenic, historic and cultural value;

Areas particularly suited for park and recreation purposes, including access to lakeshores, beaches, and rivers and streams;

Areas which serve as links between major recreation and open-space reservations, including utility easements, banks of rivers and streams, trails, and scenic highway corridors.

-Open space for public health and safety, including, but not limited to:

Areas that require special management or regulation because of hazardous or special conditions such as earthquake fault zones, unstable soils areas, flood plains, watersheds, areas presenting high fire risks, areas required for the protection of water quality and water reservoirs and areas required for the protection and enhancement of air quality.

- Demands for trail-oriented recreational use.
- The feasibility of integrating City and County trail routes with appropriate segment of the California Recreational Trails System.

Local Issues:

Loss of Open Space:

1. Loss of oak trees and other natural vegetation.
2. Retention of Mt. Washington and Lincoln as open space for public use and enjoyment.
3. Loss of agricultural soils and development pressure on County agricultural preserve.
4. Groundwater recharge areas.
5. Plant communities in river and creek corridors are being reduced.
6. Preservation of water quality (watershed and riparian corridors).
7. Rare and endangered plants and animals have not been properly identified in Calistoga.
8. Forest land is being developed and in some cases cut down despite protective regulations.

9. Development of sensitive lands, especially hillsides, is increasing.
10. Loss of open space will diminish the community character of Calistoga.
11. Pressures for affordable housing will reduce lot size and thereby reduce open space.

Safety:

1. Slope stability on hillside properties.
2. Earthquake and ground stability since Calistoga is in a Group IV Earthquake region.
3. Flood plain property is under increased pressure to develop. In what manner should Calistoga allow development to occur?
4. Fire hazard is very high in Calistoga especially in the open space areas. Such fires may pose a hazard to the more urbanized areas of town. What measures need to be taken to minimize the fire risks?
5. Erosion of stream banks and hillsides increases with urban development.

Conservation Measures:

1. Archeological resources are not properly identified.
2. Access to and along creeks and rivers has diminished as Calistoga has developed.
3. Recreational trails have been reduced in number because of increased restrictions by private landowners. What trails the public can use need maintenance.
4. Parks development is needed in Calistoga especially if it develops in new areas. Where should they be located and how are they to be maintained?
5. There is no comprehensive plan for the development of parks and retention of open space.
6. Historic resources have been identified but no program exists for their preservation or restoration.
7. Water conservation and water consumption measures have not been adhered to.

8. Landscaping requirements for new development are not clear and no requirement for water conservation measures are given.
9. There are no measures for protection of view corridors, unique landforms, scenic highways, or buffers between neighborhoods of differing intensities.
10. Building height standards and protection of viewsheds.
11. Preserve visual qualities (viewshed aesthetically controlled growth).
12. Hillside development is reducing the forest land in the City.
13. The wastewater treatment plant should be visually enhanced to perhaps provide an added public use including a walkway near it.

NOISE ELEMENT

The Noise Element shall identify and appraise noise problems in the community. The noise shall analyze and quantify, to the extent practicable, current and projected noise levels for all of sources of significance.

State Mandated Issues:

- Identification and appraisal of major noise sources;
- Existing and projected levels of noise and noise contours for major noise sources;
- Determination of the extent of "noise problems in the community;"and,
- Section and imposition of methods of noise attenuating and the protection of residences from excess noise.

Local Issues:

1. Change in community character as noise levels increase.
2. Noise from specific sources: airport, tow planes, sprint car races, roadways.
3. Noise impact with increased traffic on existing roads from changes in circulation patterns.
4. Siting or conditioning new development to maintain existing noise levels or to correct noise problems.

5. Enforcement procedures to penalize noise violators.
6. Need for standards to determine tolerable noise levels.

SAFETY ELEMENT

The Safety Element must address the protection of the community from any unreasonable risks associated with the effects of seismically induced surface rupture, ground shaking, ground failure, tsunami, seiche, and dam failure; slope instability leading to mudslides and landslides; subsidence and other geologic hazards in area; flooding; and wildland and urban fires. The safety element shall include mapping of known seismic and other geologic hazards. It shall also address evacuation routes, peakload water supply requirements, and minimum road widths and clearance around structures, as those items relate to identified fire and geologic hazards.

State Mandated Issues:

- The effects of seismically induced surface rupture, ground shaking, ground failures, tsunamic, seiche, and dam failure;
- The effects of slope instability leading to mudslides and landslides, subsidence, and other geologic hazards known to the City;
- Mapping of known seismic and other geologic hazards;
- Flooding; and,
- Identification and appraisal of evacuation routes, peakloads water supply requirements, and minimum road widths as they relate to identified fire and geologic hazards.

Local Issues:

1. Hazardous materials being trucked through town, and substances used by bottling companies.
2. Emergency response plans are largely unknown to local residents.
3. Unreinforced masonry buildings are subject to severe shaking during a seismic event.
4. Geothermal waters and their chemical constituency pose potential health problems if not properly managed.

5. Geothermal well drilling fluids and cuttings may expose hazardous chemicals to the groundwater and land surface.
6. Geothermal geysers and pipelines can expose the public to extreme temperatures.
7. Sewer sludge disposal is problematic since the local land fill may not be able to accept it.
8. Slope instability/landslide/mudslide potential increases with road and home development in hillside areas.
9. The potential for groundwater contamination heightens with increased well activity.
10. Napa Valley contains alluvial soils with high sand content. This can cause liquefaction or subsidence of soils during ground shaking caused by an earthquake.
11. Earthquakes and groundshaking are intensified in alluvial soils.
12. Flooding of the Napa River and the other creeks and water ways.
13. Fire hazards are high in both the rural and urban areas. There is need for hillside road standards for fire vehicles.
14. River and creek side slope failure and erosion.
15. River and open drainage ditches can be hazardous during the rainy season.
16. Kimball Dam could fail during a seismic event which may result in flooding and contamination and reduction of the City's water supply.
17. Fire safety of old buildings and historic buildings.
18. The fire station has limited access to Lincoln Avenue.
19. There is need for a new police facility.
20. Water demand is presently reaching the upper limits of the City's ability to provide service. Without a reserve, the City may not be able to provide adequate water pressures for fire fighting protection or may not be able to provide enough water during drought conditions.

GEOTHERMAL ELEMENT

The Geothermal Element seeks to exert local control over some aspects of geothermal energy exploration, recover, and power production.

State Mandated Issues: None, as this is an optional element.

Local Issues:

1. Geothermal is a vital part of the local economy. How can this be maintained?
2. Harmful elements within the geothermal resource, and in drilling fluids and cuttings make development of the resource difficult.
3. Increased demands for use of the resource cause concern for the overdrafting and contamination of resource.
4. Geothermal heating district and other applications. Are they cost effective?
5. Safety of pipelines and geysers.
6. Land subsidence could result if overdrafting of the resource is allowed to occur.
7. Wells, residential and commercial, have not been controlled as to use and location.
8. Disposal of geothermal waters is problematic because of the chemical composition (boron and other materials in sewer, storm drains, and creeks).
9. Allowable uses and applications of geothermal resources have not been fully explored at the local level.
10. Monitoring and management of the resource use has not been fully established.
11. Use and development on adjacent lands within the County may affect Calistoga's geothermal resource and land use plans.
12. Compatibility of geothermal use with adjacent land uses.
13. Exploration to determine nature and extent of resource.

ECONOMIC ELEMENT

The Economic Element will address the economic and fiscal problems of Calistoga and will consider the economic and fiscal effects of land use policies.

State Mandated Issues: None, as it is an optional element.

Local Issues:

Economy:

1. What measures need to be taken to maintain a healthy economic base for Calistoga?
2. Designate areas for resident-oriented commercial uses.
3. Diversification of the local economy (build a broader base than tourism).
4. Calistoga is a resort community with geothermal resources and wine tasting as its biggest draw. This will likely continue into the future.
5. Calistoga's economy at present is locally based. However, it is increasingly becoming tied into outside corporations or chain franchises.
6. Home occupations are increasing and are a viable source of additional income for retired persons. What is the City's position regarding them?
7. Leakage in a local economy is caused when locals spend money outside the City for goods and services that could be available locally. How can Calistoga reduce this leakage?
8. There is pressure for additional downtown development. How is this to be allowed and still be able to retain Calistoga's historic image?
9. Should commercial development such as spas and professional offices be allowed in residential neighborhoods?
10. The lack of a guiding economic plan or policies make it difficult for decision-makers to coordinate City government actions so that they benefit the local economy and create jobs.
11. Should the City try to determine the fiscal, social and economic impacts of a development during the approval process?

12. Cottage industries are a way a resident's can create a livelihood in their own home. Is this to be allowed?
13. Jobs are needed in Calistoga for all skill levels.
14. How much land should be devoted to commercial/industrial uses and what mix of such uses is needed to achieve a commercial sector balance.
15. Jobs are needed in Calistoga to keep children who have grown up a chance to stay.
16. To what extent should the City regulate or affect the type of businesses which want to locate here.
17. It is difficult for working people to find affordable day care for their children.
18. Should housing be allowed in commercial areas?
19. Growth pressures from region increase property values and commercial rents.
20. Large retirement population creates unique demands on the local businesses.
21. Airport property and glider operations have been successful. To what extent should they be expanded?
22. Commercial signage in downtown area has increased and even been located within the City rights-of-way and sidewalks.
23. Fast food chains or franchises may want to locate in Calistoga. Is there need to anticipate this?
24. A significant number of the transient rooms are provided by the B&B's. This success will lead to more demand and possibly requests for vacation homes. How does this affect the established hotels and motels and the residential neighborhoods?
25. Fiscal health of the City.
26. Housing is needed for new jobs produced.
27. Public services and infrastructure cannot keep up with commercial/industrial demands.
28. Impact on economy if earthquake destroys unreinforced buildings downtown.

29. Lack of City capital improvements.
30. Strip commercial development on Lincoln Avenue.
31. Redevelopment of blighted areas of town.
32. Improving downtown image.
33. City capital improvement decisions. How do they affect the local economy and established businesses?
34. Downtown parking facilities, diagonal parking and lack of efficient parking system.
35. Fairgrounds. What is its contribution to the local economy now and in the future?
36. There is a proliferation of signs on the sidewalk which should be stopped.

Tourism:

1. Amenities that Calistoga offers that attract the tourist are threatened, e.g., open space, historic resources, lack of congestion, clean air.
2. Tourism brings money into the community and creates jobs. However, it does impact the City's sewer, water and road systems and competes with the local residents in a variety of ways. How can the City strive to minimize the impacts tourism brings yet maximize the financial benefits?
3. Loss of local serving businesses to tourism oriented enterprises which can afford higher rents.
4. Highway and street congestion by tourists.
5. Impact of tourism on agriculture and small town character.
6. Is tourism dependency an asset or a constraint upon the development of Calistoga's economy?
7. The Wine Train may want to extend up to Calistoga. What is the City's position on this?
8. Shall future land use allocations reflect a tourism bias or promote a more diversified economy?

9. Is Calistoga reaching a saturation of hotel/visitor accommodations?
10. Commercial saturation of downtown Calistoga and increased economic dependency on tourism.

CITY OF CALISTOGA GENERAL PLAN
LAND USE OPTIONS AND ASSESSMENT PAPER
DECEMBER, 1989

Prepared by

Richard D. Spitler
Planning Director

Introduction

This paper was prepared to assist in the Calistoga General Plan Update. It provides land use alternatives for consideration by the public, Planning Commission and City Council. An assessment is also presented for each alternative which evaluates such factors as population impact, number of households, job creation, impact on essential city services and possible fee revenues generated by total build-out.

After review and comment by the public and the Planning Commission, the City Council will be asked to give consensus to one of the alternatives or for an alternative of its own. The chosen alternative will be used as the basis for preparation of the land use element and diagram of the general plan policy document. The alternatives presented will also be referenced and incorporated into the alternatives section of the environmental impact report that will be prepared for the general plan update.

Traffic impacts and circulation options estimated for each of the alternatives considered are presented in a separate paper prepared by Alan Tilton, Consulting Traffic Engineer.

It is important to note at the onset that, while the Council will be asked for a consensus on one of the alternatives, any and all of them have the right to change their minds at a later date with the benefit of added information and public input.

Land Use Options

In preparing the various land use options, the point of departure was the existing General Plan land use element which was adopted in 1977. This plan has stood up well through time and the alternatives presented do not create land use patterns that are dramatically different from the existing plan. The four land use options include the following:

Option 1 - Existing General Plan Land Use Map (it has been made parcel specific as inferred from the zoning map and past land uses decisions).

Option 2 - Low Density. This is characterized by increasing the Rural Residential areas of the city, and reducing the commercial land area.

Option 3 - Mixed Density. This option takes features from the other three alternatives. Impacts are similar to the existing general plan.

Option 4 - High Density. This option increases the density of undeveloped residential land and expands the commercial and industrial areas.

See attached alternative maps.

The existing General Plan land use designations, allowable uses and densities are presented in Table 1. In preparing the other three alternatives, a decision was made to simplify the number of land use designations to be used (Table 2). Also provided is a new list of allowable uses and densities for each designation. Combining districts were added to provide flexibility or specificity to land use policy for particular parcels. It is important to understand these changes as they give a different meaning to the maps. If the new scheme is agreed to by the City Council, further refinement will be needed in the policy plan.

In addition to the above, supplemental maps are attached covering the following topical areas:

Open Space - Areas that have unique open space values are presented such as creek and river ways, park lands, airport, Mt. Lincoln and Mt. Washington. This designation does not mean development is necessarily prohibited, but that the community recognizes them as contributing to the rural atmosphere of Calistoga. Open space is also present in the Rural Residential areas and undeveloped floodways, however, these are not shown on the map, as they will be recognized in the Open Space Element.

School Sites - The School District has indicated the need for a new school site within the 20 year planning horizon. Most likely a high school (the new high school would become a middle school), the site must be at least 20 acres in size, in large land holdings, and adjacent to an arterial or major collector street.

Community Shopping Center - Calistoga has need for a community shopping center to house a larger grocery store and to provide other resident oriented commercial services. In addition, the traffic consultant advises that traffic should be directed away from the downtown core and that ample parking is needed for such a facility. The sites proposed on the map were chosen because that are at least three acres in size and are still "downtown", i.e., they do not create a satellite commercial center.

TABLE 1

EXISTING GENERAL PLAN LAND USE DESIGNATIONS

Rural Residential (0-1 Dwellings Per Net Acre) - is provided essentially for low density, rural type, large lot or cluster, single family residential development, all strongly influenced by flat or not hilly topography.

Low Density: Residential(0-5 Dwellings Per Net Acre) - for areas which exhibit either a capacity for lowest density urban residential development exclusively, low density multiple residential development or areas of transition where low density multiple residential and more traditional single family residential development might exist in harmony.

Medium Density: Residential(5-12 Dwellings Per Net Acre)- for areas which exhibit either a capacity for lowest density urban residential development exclusively, low density multiple residential development or areas of transition where low density multiple residential and more traditional single family residential development exist in harmony.

High Density: Residential(5-20 Dwellings Per Net Acre)- is provided for most extensive multiple residential development.

Commercial:

Town Center Commercial: utilized in the Town Center to encourage continued development of a strong core area.

Highway Commercial: is intended for the provision of largely automobile-oriented "one-stop" commercial facilities.

Commercial-Industrial: is provided for utilization of service-oriented commercial and light industrial uses.

Professional: is provided primarily in locations throughout the downtown area.

Medical Services: is provided identify and support existing and proposed medical services.

Transitional: is provided to encourage proper use relationships between adjacent or neighboring developments, particularly in areas supporting uses dramatically different in intensity. It may allow a wide variety of uses ranging from light commercial and office to residential.

*Planned Development: is to provide a planning mechanism which allows large areas to be planned as a unit and allow a mixture of compatible land uses.

Controlled Light Industrial: is intended for encouragement of selected, larger, well controlled, nonpolluting industrial park-type manufacturing facilities.

* From Interim Development Policies adopted by City Council in June 1988(Resolution 88-19)

TABLE 2

PROPOSED GENERAL PLAN LAND USE DESIGNATIONS

Residential

(RR) Rural Residential - This designation is applied to areas of the city located on the outer fringes of the existing service area, adjacent to County agricultural preserve areas and where steep hillsides limit development potential. Because of lack of city services and site constraints, development densities are limited. Allowable uses include single family residential, granny units, limited light agricultural uses and structures, home occupations and churches. This area serves as a buffer between the County agricultural preserve and the urban core of Calistoga. With planned capital improvements extending water and sewer services, this area can be back-filled to allow higher densities (up to 20,000 sq.ft. per lot) to keep urban pressures off the agricultural preserve over the next twenty years and beyond.

Allowable Net Densities:

80,000 - 200,000 square feet if both on-site water and wastewater disposal.

40,000 - 80,000 square feet if either on-site water or wastewater disposal.

20,000 - 40,000 square feet if City water and wastewater services are provided.

In hillside areas, the minimum density is 40,000 square feet. The specific number of lots allowable and size of lot will be determined by application of a slope density formula.

Areas of steep slopes, unusable land, streets, floodway and park dedications are to be subtracted from the gross acreage to determine net acreage. The exception to this are hillside areas which are subject to the slope density formula.

(LDR) Low Density: Residential - This designation is applied to areas with both City water and sewer services and provides a transition between the outer Rural Residential areas and the more densely populated areas located closer to downtown Calistoga. Close proximity to the arteries and major collections is required. These areas are also characterized as being generally flat. Major residential subdivisions are allowed if measures are taken to insure compatibility with adjacent rural residential uses. Allowable uses includes single family residences, including mobile homes, granny units, home occupations, public uses and churches.

Note: Designations have been modified through Planning Commission and City Council hearings. Please refer to Volume II: Policy and Program Document of October 16, 1990 for designations as adopted.

TABLE 2,continued

Allowable Net Densities:

10,000 - 20,000 square feet.

Areas of steep slope, unusable land, streets, floodways and park dedications are to be subtracted from the gross acreage to determine net acreage.

(MDR) Medium Density - Residential

This designation is applied to areas with both City water and sewer services and provides for increased residential densities. They are generally located between the Low Density and High Density residential designations. It provides for major subdivisions and an opportunity for single family home ownerships for low to moderate incomes. Park dedications may be required to provide active open space areas. Innovative design is encouraged to reduce "tract" effect. Deviation from traditional design standards will be allowable with a Planned Development combination designation. Allowable uses include: single family residences, duplex, triplex, granny units, mobile home parks, home occupations, bed and breakfast units, churches, and public uses.

Allowable Net Density:

6,000 - 10,000 square feet.

Areas of step slope, unusable land, street, floodways, and park dedications are to be subtracted from this gross acreage to determine net acreage.

(HDR) High Density: Residential

This designation is applied to areas either in the town core area or where large land holdings with full city services and good street access allow for higher density development. It provides for multi-family residential uses and an opportunity for affordable housing opportunities for families and seniors with lower to moderate incomes. Building heights are limited to not exceed 30 feet. Development must be attractively landscaped and provide off-street parking facilities without backing onto the street. Allowable Uses Include: Multi-family units (triplex and higher), residential care facilities, home occupations, public and quasi-public uses, and churches.

Allowed Net Densities:

2,000 - 6,000 square feet per unit.

Areas of steep slope, unusable land, streets, floodways and park dedicated land are to be subtracted from this designation to determine net acreage.

TABLE 2,continued

Residential Combination Designations

(HR) Hillside Residential

This combination designation is to be applied to Rural Residential (RR) areas where steep slopes or hillside conditions exist. As a part of the approval process detailed environmental information must be submitted including topography, preliminary grading and drainage plans, road and building plans, tree and vegetation removal. In addition, development must adhere to strict design review guidelines to protect the viewshed.

Allowed uses include those provided for in the RR designation. However,clustering of single family uses is allowed with discretionary permit approval.

Allowed Net Density:

40,000 - 200,000 square feet. Determination of actual size and number of parcels or number of units must be subject to a slope density formula.

(PD) Planned Development

This combination designation can be applied to (LDR) Lower Density - Residential, (MDR) Medium Density- Residential, and (HDR) High Density-Residential designations located in sensitive environmental and transitional areas. It can also be applied where innovative design standards are to be applied to achieve a superior design or affordable housing.

Allowed uses include all provided for in the LDR , MDR and HDR designations.

Allowed Net Densities:

As provided for in LDR, MDR and HDR designations.

(VA) - Visitor Accommodations

This combination designation is to be applied to (HDR) High Density - Residential designations where existing or adjacent motel, hotel or bed and breakfast visitor accommodations occur. Development can be allowed if determined to be compatible with adjacent residential uses.

Allowable uses include motel, hotel, inns, bed and breakfast units in addition to multi-family units (triplex and greater).

TABLE 2, continued

Allowable Net Density:

Residential as provided in HDR; hotel/motel/inn/B&B/ one unit per 1,000 square foot net.

COMMERCIAL

(C) General Commercial

This designation is applied to all commercial areas in the downtown area and to existing neighborhood commercial centers. Access to all city services and arterial streets is required. Development must be compatible with adjacent residential uses by regulating noise and odor emissions and provision of adequate traffic control and parking. These areas must be attractively landscaped with regulated signs. Pedestrian walkways must be provided if none exist. Development is not allowed if water and sewer demand is greater than 10 acre feet per year or pollution of air or water is likely to occur. Limited residential units are allowed in the downtown area with discretionary permit review.

Allowable uses include, retail, personal services, professional offices, visitor accommodations, medical offices and clinics, shopping centers, limited residential, eating establishments, bars, service stations, public agencies, public and quasi-public uses, light manufacturing service, churches, and hospitals.

Allowable Net Densities:

Lot size: minimum 6,000 square feet.

Motel, hotels, inns: one unit/1,000 square feet. Other commercial uses: floor area ratio(FAR) of .80 (total building square footage (gross floor area) divided by net land area).

(I) Light Industrial

This designation is applied to flat areas of the City where existing industrial use occurs and where they can be isolated or buffered from residential uses. All City services must be available and access to street arterials is required or must be provided for. Regulations must be made to insure development is done in an environmentally sensitive manner and compatible with adjacent residential and commercial uses. No uses should be permitted if adverse to noise, air, water and wastewater quality standards. No uses are allowed if it is determined that the use would have a total demand on the City water and or sewer system of 10 a.f. a year or greater.

TABLE 2, continued

Development must be appropriately designed, landscaped and have ample on-site parking. Allowable uses include heavy commercial and light industrial uses, including manufacturing, auto repair, bottling plants, storage, assembly, service and repair, and greenhouses. Accessory commercial uses such as retail outlet, eating establishments, and offices are allowed with discretionary permit review or as a part of an overall industrial park plan approval.

Allowable Net Densities:

Lot size minimum: 6,000 square feet.

Floor area ratio(FAR) of .90 (total building square footage (gross floor area) divided by net land area.

COMMERCIAL COMBINATION DESIGNATIONS

(VA) - Visitor Accommodations

This combination designation is to be applied to (C) Commercial designations where existing or adjacent motel, hotel or bed and breakfast visitor accommodations occur or where such developments would be beneficial. Development can be allowed in other areas if determined to be compatible with adjacent commercial and residential uses.

Allowable uses include motel, hotel, inns, bed and breakfast units in addition to the commercial and residential uses allowed in the Commercial designation.

Allowable Net Density:

Hotel/motel/inn/B&B/ one unit per 1,000 square foot net.

(DD) - Design District

This combination district can be applied to designations in commercial areas, major entrances to the City and to large land holdings with unique features. Its purpose is to require Planning Commission review of building design and property development such that development retains existing historical features of buildings and that new development is compatible with such historical structures. It also serves to insure that major entrances to the City are attractively developed. Design guidelines should be developed to assist in making decisions.

TABLE 2, continued

Allowable uses include those provided for in C base district.

Allowable density - same as C base district.

A - Airport

This combining district limits use and development in certain C and P designations to airport and airport related uses. Any expansion of uses of new structure must have discretionary permit approval to insure safety of the airport and long term operations. Compatibility with adjacent residential and commercial uses must be insured by examining noise concerns and design and placement of structures. Allowable uses are limited to airport and airport related uses including: taxi service, glider operations, airplane repair and maintenance or related accessory structures and uses, such as office. Other limited accessory uses are allowed with discretionary review such as eating establishments if clearly subordinate and incidental to airport uses.

Allowable Density:

Lot size: minimum 10 acres.

Other commercial uses: floor area ratio of .10 (total building square footage (gross floor acre divided by the land area).

PUBLIC/QUASI-PUBLIC

(P) Public/Quasi-Public

This designation is applied to public or private land areas currently used or planned for public uses. It provides for a wide variety of uses for the general public benefit. Because of this benefit, such designation can be applied to any area of the City, as the beneficial use dictates. However, such uses must be attractively designed and must incorporate measures to insure compatibility with adjacent residential and commercial uses. Allowable uses include public uses such as City and County offices, corporation yards, water and wastewater facilities, parks, libraries, schools, community center, museums, fairgrounds and quasi-public uses such as telephone and electric substations, churches, fraternal buildings and hospitals.

Allowable Net Densities:

Minimum Lot Size: 6,000 square feet.

Floor area ratio (FAR) of .80 (gross floor area) divided by net land area.

OPTIONS ANALYSIS

For each of the four alternatives the development potential at full buildout was determined. This was accomplished by first determining the existing level of development for all 1400 parcels located within the City. This was done by a land use survey conducted by City staff in February 1989. After this was accomplished each alternative land use plan was compared against the existing vacant and underdeveloped parcels. This yielded the net or added development potential for each lot. The results were tabulated by proposed land use designation, e.g., LDR, MDR, or C. The results are summarized in Table 3. Certain assumptions had to be made and these are given with each tabulation.

It must be remembered that it is highly unlikely that the full development potential will ever be achieved. This is because of individual site constraints not recognized in the survey, individual land owner decisions not to develop the property to its full potential, and the outcome of needed discretionary permit approvals which may reduce density of development. What is presented then is the "worst" case scenario.

Following the tabulations are the potential impacts(population, job creation, sewer, water, etc.) associated with the "full build-out" scenario for each alternative. These calculations are presented in Table 4. The standards used for determining impacts for each category is summarized in Table 5. While difference standard assumptions can be used, it perhaps is more important to make relative comparisons rather than to argue the validity of the absolute numbers used.

A review of the tabulations reveals some interesting comparisons. While the amount of land available for development in each alternative is much the same(679 to 705 acres), the resultant number of housing units, population, and commercial floor area shows significant differences, especially in the high density alternative. For example, the added population ranges from 1922 to 4845 persons when looking at all alternatives. When the existing 4300 persons in Calistoga is added to this total, the population range is from 6222-9145 persons. If the high density alternative is removed, the total population range drops to 6222 to 7981 - - a difference of 1759 persons.

The number of jobs estimated to be created in the commercial sector ranges from 2087 to 4491. This creates a demand for housing units in a range of 1739 to 3749,i.e., there would be more demand for housing than the residential sector could provide. Under this scenario, either added housing would have to be provided in the county land or what housing there is in Calistoga would be in high demand, possibly inflating prices. However, if one looks at the "Mix" alternative the demand for housing is 1996 and the provision is 1753. This is reasonably close given the kind of analysis performed.

Water demand has great differences depending on the alternative used. At a minimum approximately 545 acre feet is needed. The worst case(under the "high" density alternative) is 1578 acre feet. The resultant additional impact in wastewater treatment demand ranges from .469 - 1.71 mg/d. If this is added to the existing dry weather flow of .68 mg/d, the total wastewater

that would have to be treated would be from 1.149 - 2.39 mg/d.

In reviewing the possible fees that would be generated, the sewer development and connection fees seem substantially higher than the water fees. This suggests that the basis for these fees needs to be examined. The May 1988 Kennedy/Jenks/Chilton report entitled, Wastewater Treatment and Disposal Facilities Plan Update- Ten Year Action Plan indicates that only 3.54 million dollars(1988) is needed to bring the needed capacity to the treatment plant.

FINDINGS

1. A full build-out scenario under any of the alternatives yields Calistoga still a "small" town under 10,000 persons over the next 20 years. If the "high" density alternative is dropped, this population drops to just under 8,000, almost a doubling of the present population of Calistoga.
2. The growth scenario presented represents departures from the existing general plan. Calistoga will still remain mainly a residential community and most of the available commercial land will stay where it is under the current general plan.
3. While there appears to be ample commercial land available for the next twenty years, difficulties arise in finding suitable lands for a needed community shopping center and for light industrial uses.
4. A jobs to housing balance can probably exist with all of the alternatives except the "high" density one.
5. Finding suitable sites for multi-family housing is difficult because of the need for large lots in single ownership that are close to city services. Most are already developed.

TABLE 3

EXISTING GENERAL PLAN: DEVELOPABLE LAND POTENTIAL

<u>ZONE</u>	<u>#PARCELS</u>	<u>#HOUSING UNITS</u>	<u>COM.SQ.FT.</u>	<u>AC(NET)</u>	<u>%TOTAL</u>
RR	86	376	-	531	77.2
R-1	116	400	-	81	11.7
R2&R3	36	130	60,000	96	1.3
T	37	130	324,890	28	4.0
PD	19	242	510,570	23.4	3.0
C&HC	21	44	116,938	5	.7
I	2	-	446,495	9	1.1
TOTALS:	316	1,296	1,458,890	687	100

POTENTIAL USES OF COMMERCIAL LAND:

Retail/Office: 533,725 sq.ft.

Transient: 579 units

Restaurant: 82,240 sq.ft.

Industrial: 446,495 sq.ft.

ASSUMPTIONS:

1. Allowable Densities:

- RR- 1 unit per 40,000 sq.ft.
- LDR- 1 unit per 8,000 sq.ft.
- MDR- 1 unit per 3,333 sq.ft.
- HDR- 1 unit per 2,000 sq.ft.
- T - 1 unit per 2,000 sq.ft.
- PD - 1 unit per 2,000 sq.ft.

2. Twenty percent of total acreage was subtracted for street/park dedications for acreage parcels, except where noted below.
3. In an in-fill neighborhood with present Multi-family or Commercial zoning, only vacant lots or underutilized large parcels were counted. For parcels with MDR or HDR land use designation and R-1 zoning, lot size was deemed to be 6,000 sq.ft.
4. RR-RH designation lands were calculated at 50% of allowable density.
5. Floodway lots were deleted.
6. Commercial and industrial building intensity: 50% of land used for landscaping and parking.

TABLE 3, continued

LOW DENSITY GENERAL PLAN: DEVELOPABLE LAND POTENTIAL

<u>ZONE</u>	<u>#PARCELS</u>	<u>#HOUSING UNITS</u>	<u>COM.SQ.FT.</u>	<u>AC(NET)</u>	<u>%TOTAL</u>
RR	120	448	-	564	83
LDR	14	35	-	9.4	1
MDR	93	328	-	61.8	9
HDR	22	104	2,000	6.3	1
C	37	-	1,067,688	28	4
I	2	-	446,495	9	1.1
TOTALS:	288	915	1,516,183	679	100

POTENTIAL USES OF COMMERCIAL LAND:

Retail/Office:	686,528 sq.ft.
Transient:	445 units
Restaurant:	88,240 sq.ft.
Industrial:	446,495 sq.ft.

TABLE 3,continued

MIXED DENSITY GENERAL PLAN: DEVELOPABLE LAND POTENTIAL

<u>ZONE</u>	<u>#PARCELS</u>	<u>#HOUSING UNITS</u>	<u>COM.SQ.FT.</u>	<u>AC(NET)</u>	<u>%TOTAL</u>
RR	111	544	-	445	66
LDR	17	106	-	28	4
MDR	103	839	-	133	20
HDR	24	264	60,000	17.5	2
C	39	-	1,067,688	38.8	6
I	3	-	519,240	12.5	2
TOTALS:	297	1753	1,646,928	675	100

POTENTIAL USES OF COMMERCIAL LAND:

Retail/Office: 686,528 sq.ft.

Transient: 505 units

Restaurant: 88,240 sq.ft.

Industrial: 446,495 sq.ft.

TABLE 3,continued

HIGH DENSITY GENERAL PLAN: DEVELOPABLE LAND POTENTIAL

<u>ZONE</u>	<u>#PARCELS</u>	<u>#HOUSING UNITS</u>	<u>COM.SQ.FT.</u>	<u>AC(NET)</u>	<u>%TOTAL</u>
RR	29	116	-	221	31
LDR	83	1046	-	197	28
MDR	134	923	-	140	20
HDR	16	222	60,000	21	3
C	54	-	2,878,322	105	15
I	6	-	735,420	21	3
TOTALS:	322	2307	3,673,742	705	100

POTENTIAL USES OF COMMERCIAL LAND:

Retail/Office: 1,318,528 sq.ft.

Transient: 1,735 units

Restaurant: 158,240 sq.ft.

Industrial: 735,420 sq.ft.

ASSUMPTIONS:

- Allowable Densities:
 RR- 1 unit per 20,000 sq.ft.
 LDR- 1 unit per 10,000 sq.ft.
 MDR- 1 unit per 6,000 sq.ft.
 HDR- 1 unit per 2,000 sq.ft.
- Twenty percent of total acreage was subtracted for street/park dedications for acreage parcels, except where noted below.
- In an in-fill neighborhood with present Multi-family or Commercial zoning, only vacant lots or underutilized large parcels were counted.

4. RR-RH designation lands were calculated at 50% of allowable density.
5. Floodway lots were deleted.
6. Commercial and industrial building intensity: 50% of land used for landscaping and parking.

TABLE 4

NET IMPACTS ASSOCIATED WITH FULL BUILD-OUT
FOR FOUR LAND USE ALTERNATIVES

	<u>EXISTING</u>	<u>LOW</u>	<u>MEDIUM</u>	<u>HIGH</u>
<u>POPULATION:</u>	2722	1922	3681	4845
<u>JOB CREATION(TOTAL):</u>	2087	2386	2396	4499
Retail/Office:	1067	1373	1373	2637
Transient:	93	71	81	277
Restaurant:	212	227	227	407
Industrial:	715	715	715	1178
<u>HOUSING DEMAND:</u>	1739	1988	1996	3749
<u>CITY SERVICES:</u>				
WATER(acre feet):	760	545	907	1578
SEWER(mg/d):	.557	.469	.656	1.71
SCHOOLS:	638	451	864	1137
PARKS:	14	9.6	18	24
FIRE:	5	4	7	10
POLICE:	5	4	7	10
<u>FEE REVENUES(MILLIONS):</u>				
SEWER:	15.4	7.3	17.3	30.7
WATER:	5.2	3.3	6.2	10.7
PUBLIC SAFETY:	4.1	2.7	4.9	8.9
TOT(annual)	.887	.682	.774	2.61
SCHOOL:	3.0	1.66	4.0	5.7

TABLE 5
STANDARDS USED FOR OPTIONS ASSESSMENT

POPULATION: 2.1 persons per household; source: U.S. Census 1980

JOB CREATION:

Retail/Office: 500 sq.ft/employee
 Transient: .16 employees/room
 Restaurant: 388 sq.ft/employee
 Industrial: 624 sq.ft/employee

Source: Retail/Office: Calistoga Business Licenses
 Restaurant and Industrial: Urban Land Institute: Business and Industrial
 Park Handbook, 1988.
 Transient: Urban Land Institute Case Study, 1989.

ESSENTIAL CITY SERVICES:

Education: .493 students per household
 .28 students: K-6
 .07 students: 7-8
 .14 students: 9-12

Source: John Burke, School Superintendent, Calistoga School District; Breakdown percentages represent statewide averages.

PARKS: 3-5 ACRES/1000 population(will use 5 acres per 1000)

Source: Outdoor Recreation Space Standards, Department of Interior, Bureau of Outdoor Recreation, 1970.

FIRE: 2 Firefighters/1000 population

Source: A Framework for Projection Employment and Population Changes accompanying Energy Development, Phase III.

POLICE: 1.4 to 3 police/1000 population(will use 2.2/1000).

Source: A Framework for Projection Employment and Population Changes Accompanying Energy Development, Phase III.

WATER: Residential: .31 acre feet per household/year(281 gallons per household/day). This is 134 gallons/person/day.

Office/Retail: .12 acre feet/1000 sq.ft/year.

Transient: 2 persons x .18 acre feet x # units x .70 occupancy rate equals water use per year.

TABLE 5,continued

Restaurant: 1.0 acre feet/1000 sq.ft./year

Source: City water records and RMS standards.

SEWER: Residential: 75% of water use.

Commercial and industrial: 90% of water use.

Source: Kennedy Jenks Chilton, 1980.

FEE REVENUES:

Sewer Development: \$1212/bedroom or per person equivalent(.11 acre feet) for commercial and industrial uses.

Sewer Connection: Residential- \$1575/bedroom;Commercial-\$1575/10,000 sq.ft; motels,inns: \$1575/room.

Water Development: \$6,800/acre foot.

Public Safety: 2% of construction value.

Residential: \$54/sq.ft.

Office: \$64/sq.ft.

Restaurant: \$75/sq.ft.

Motel: \$86/sq.ft.

Industrial: \$86/sq.ft.

Source: Building Valuation data, Building Standards Magazine, May - June 1989.

TRANSIENT OCCUPANCY TAX: 10% OF \$60 X .70 occupancy x # rooms x 365 days.

SCHOOL IMPACT FEE:

Residential: \$1.50/sq.ft.

Commercial: \$.25/sq.ft.

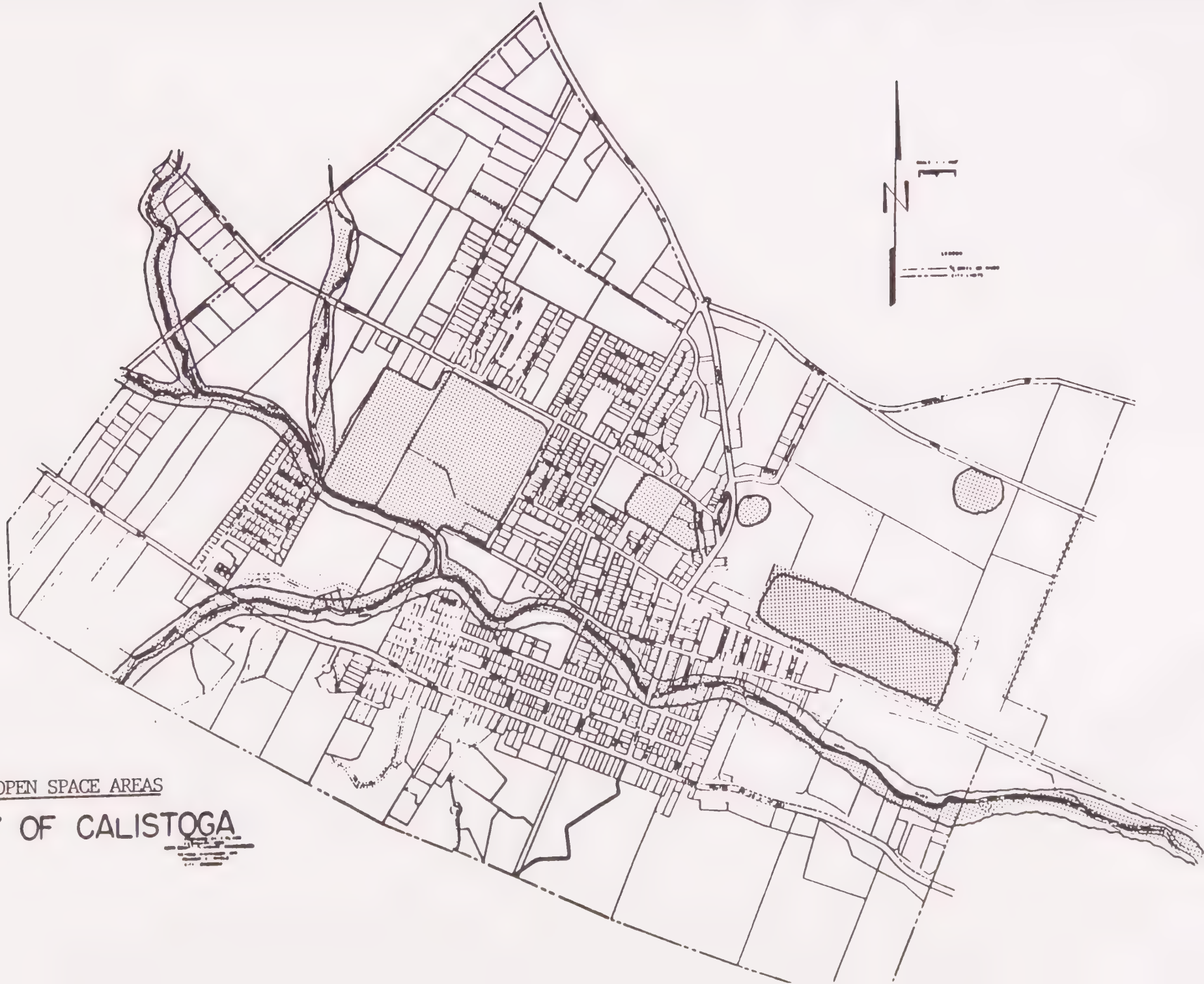
Exhibit 1
Land Use Option 1

Exhibit 2
Land Use Option 2

Exhibit 3
Land Use Option 3

Exhibit 4
Land Use Option 4

OPEN SPACE AREAS
CITY OF CALISTOGA



Sites for Resident-Oriented
Commercial Shopping Centers
CITY OF CALISTOGA



Potential School Sites
CITY OF CALISTOGA



APPENDIX B
GENERAL PLAN REQUIREMENT
CHECKLIST/INDEX

GENERAL PLAN REQUIREMENT CHECKLIST/INDEX

REQUIREMENT	VOLUME ¹	SECTION
LAND USE		
Proposed general distribution and location and extent of the uses of the land for:		
• housing	I, II, III	Land Use
• business	I, II, III	Land Use
• industry	I, II, III	Land Use
• open space	I, II, III	Land Use
• agriculture	I, II, III	Land Use
• natural resources	I, II, III	Land Use
• recreation	I, II, III	Land Use
• enjoyment of scenic beauty	I, II, III	Land Use
• education	I, II, III	Land Use
• public buildings and grounds	I, II, III	Land Use
• solid and liquid waste disposal	I, II, III	Land Use
• other categories of private and public	I, II, III	Land Use
Statement of standards of population density (people in a given area) and not du per acre, unless the basis for correlation between the measure of du per acre and the number of people is set forth explicitly in the plan (Twain Harte v. Tuolumne, 138 CA 3d 699)	I	Population
Statements of standards of building intensity	II	Land Use
Identify areas subject to flooding and review annually	I, II, III	Health and Safety
Timberland production	I	Biology

¹The General Plan Update consists of three volumes: MEA and Issues and Options, Policy and Program Document, and EIR.

GENERAL PLAN REQUIREMENT CHECK
INDEX
cont.

REQUIREMENT	VOLUME	SECTION
CIRCULATION		
General location and extent of:		
● existing and proposed major thoroughfares	I, II, III	Circulation
● transportation routes	I, II, III	Circulation
● terminals	I, II, III	Circulation
● other local public utilities and facilities	I, III	Public Services
HOUSING		
Previous Housing Element Evaluation	I	Housing
Assessment of housing needs and inventory of resources and constraints to meeting needs		
● analysis of population and employment trends	I	Housing
● documentation of projections	I	Housing
● quantification of existing and projected housing needs for all income levels including share of regional housing need	I	Housing
● analysis & documentation of household characteristics including level of payment compared to ability to pay	I	Housing
● housing characteristics including overcrowding	I	Housing
● housing stock condition	I	Housing
● inventory of land suitable for residential development including vacant sites and redevelopment sites & analysis of relationship of zoning & public facilities & services to these sites	I	Housing
● analysis of potential & actual governmental constraints upon the maintenance, improvement or development of housing for all income levels, including land use controls, building		

GENERAL PLAN REQUIREMENT CHECK
INDEX
cont.

REQUIREMENT	VOLUME	SECTION
HOUSING cont.		
<ul style="list-style-type: none"> codes, site improvements, fees and exactions & permit processing procedures 	I	Housing
<ul style="list-style-type: none"> analysis of potential & actual nongovernmental constraints upon maintenance, improvement, and development of housing for all income levels, including availability of financing, the price of land, & costs of construction 	I	Housing
<ul style="list-style-type: none"> analysis of special housing needs such as handicapped, elderly, large families, farmworkers, and families with female head of households 	I	Housing
<ul style="list-style-type: none"> assisted rental housing at risk for conversion 	I	Housing
<ul style="list-style-type: none"> energy conservation opportunities 	I	Housing
Statement of community goals, quantified objectives & policies relative to the maintenance, improvement and development of housing	II	Housing
A Program w/ a 5 year schedule of actions, including:		
<ul style="list-style-type: none"> identify adequate sites which will be made available through zoning and development standards and public facilities; encourage development of a variety of housing types, including rentals, factory built, mobile homes, emergency shelters and transitional housing 	II	Housing
<ul style="list-style-type: none"> assist in the development of housing to meet the needs of low and moderate income households 	II	Housing

**GENERAL PLAN REQUIREMENT CHECK
INDEX**
cont.

REQUIREMENT	VOLUME	SECTION
HOUSING cont.		
• address and remove government constraints	II	Housing
• conserve and improve conditions of existing affordable housing stock	II	Housing
• promote equal housing opportunities	II	Housing
• identification of agencies and officials responsible for implementation of actions and means through which consistency will be achieved with other Plan elements and community goals	II	Housing
• description of public participation program	I III	Introduction, Housing Introduction
CONSERVATION		
Conservation, development, and utilization of natural resources including:		
• water and hydraulic forces	I, II, III I, III	Health and Safety, Hydrology
• forests	I, III	Biology
• soils	I II	Soils/Agriculture Conservation
• rivers and other waters	I I, III II II	Health and Safety Biology Conservation Geothermal
• harbors	N/A	
• fisheries	N/A	
• wildlife	I, III II	Biology Conservation
• minerals	I II	Minerals Conservation

**GENERAL PLAN REQUIREMENT CHECK
INDEX**
cont.

REQUIREMENT	VOLUME	SECTION
OPEN SPACE		
Open space for the preservation of natural resources including but not limited to:		
● areas required for the preservation of plant and animal life including habitat for fish & wildlife	I, III II	Biology Conservation
● areas required for ecological & other scientific study	II	Conservation
● rivers, streams, bays and estuaries	I, III II	Health and Safety Biology Safety, Conservation
● coastal beaches, lakeshores, banks of rivers and streams and watersheds	I, III II	Health and Safety Biology Conservation
Open space used for the managed production of resources including but not limited to:		
● forest lands, rangeland, agricultural lands and areas of economic importance for the production of food and fiber	I II	Soils/Agriculture Biology Conservation
● areas needed for recharge of groundwater basins	I II	Biology Geothermal
● areas containing major mineral deposits including those which are in short supply	I, III II	Minerals Geothermal
Open space for outdoor recreation		
● areas of outstanding historical/cultural value	I, III II	Cultural Conservation

GENERAL PLAN REQUIREMENT CHECK
INDEX
cont.

REQUIREMENT	VOLUME	SECTION
OPEN SPACE cont.		
• areas particularly suited for park and recreation purposes including access to lakeshores, beaches, rivers, and streams	I II	Recreation Open Space
• areas which serve as links between major recreation and open space reservations, including utility easements, banks of rivers and streams, trails, and scenic highway corridors	I II I, II	Recreation Open Space Transportation
Open space for public health and safety:		
• areas requiring special management or regulation because of hazardous or special conditions such as earthquake fault zones, unstable soil areas, floodplains, watersheds, areas required for the protection and enhancement of air quality	I II	Health and Safety Biology Air Quality Safety, Conservation
Open Space Inventory	I, II	Land Use
Action Program	II	Open Space

**GENERAL PLAN REQUIREMENT CHECK
INDEX**
cont.

REQUIREMENT	VOLUME	SECTION
NOISE		
Analyze and quantify current and projected noise levels for:		
● highways and freeways	I, III	Noise
● primary arterials and major local streets	I, III	Noise
● passenger & freight on-line rail & ground rapid transit	I, III	Noise
● commercial, general aviation, heliport, and military air operations	I, III	Noise
● local industries plants	I, III	Noise
● other ground stationary noise sources	I, III	Noise
Use CNEL or Ldn for contours	I, III	Noise
Noise contours shall be used as guide to estimate land use pattern that minimizes community exposure to excess noise	I, III	Noise
Implementation measures and possible solutions that address existing and foreseeable noise problems	II	Noise
PUBLIC SAFETY		
Protection of the community from unreasonable risks associated with:		
● surface rupture	I, II, III	Health and Safety
● ground shaking	I, II, III	Health and Safety
● ground failure	I, II, III	Health and Safety
● tsunami	I, III	Health and Safety
● seiche	I, II, III	Health and Safety
● dam failure	I, II, III	Health and Safety
● slope stability	I, II, III	Health and Safety

**GENERAL PLAN REQUIREMENT CHECK
INDEX**
cont.

REQUIREMENT	VOLUME	SECTION
PUBLIC SAFETY cont.		
● subsidence	I, II, III	Health and Safety
● other geologic hazards	I, II, III	Health and Safety
Flooding	I, II, III	Health and Safety
Wildland and urban fires	I, II, III	Health and Safety
Evacuation routes	II	Health and Safety
Peakload water supply rates	I, III II	Public Services Circulation
Minimum road widths	I, II	Circulation
Clearance around structures	II	Safety
Geologic hazards mapping	I, III	Health and Safety

APPENDIX C

ASSISTED RENTAL HOUSING AT RISK FOR CONVERSION

Assisted Rental Housing at Risk for Conversion

1. Roy Lally
2215 Grant Street
Calistoga
\$17,500 loan
1 unit
\$79,000 Value
Exp. Date 3-91
Unknown square footage
Building date unknown
Tenant type unknown

2. Al Matinrazm
1603 Lake Street
\$15,800 loan
\$95,000 Value
750 Square feet
1 unit
Exp. Date 10-93
Building date unknown
Tenant type unknown

Assisted Rental Housing Units Potentially Lost

3. Sean Fitzgerald
1405 Lake Street
\$126,500 Value
1 unit
\$75,000 loan
1000 Square feet
Exp. Date 5-90
Building date unknown
Tenant type unknown

4. Al Matinrazm
1603 Lake Street
\$28,178 loan
\$95,000 Value
515 Square feet
Exp. Date 6-89
Building date unknown
Tenant type unknown

Cost to preserve units at risk for conversion:

1. \$17,500 loan
Exp. Date 3-91
Number of monthly payments remaining: 6
Estimated montly payment: \$338.00
Balance Due: \$2,028.00
2. \$15,800 loan
Exp. Date 10-93
Number of monthly payments remaining: 48
Estimated montly payment: \$305.00
Balance Due: \$14,640.00

Estimated cost of extending CDBG subsidy: No additional CDBG funds are anticipated. Should further rehabilitation work be required, costs of assuming loan repayment can be made at that time.

Estimated cost of maintaining rent levels: This cost can be estimated through the following formula, [Market rate rent - affordable rent level].

Affordable rents, based on income limits, are indicated on the table below.

AFFORDABLE RENTS

INCOME GROUP	% OF MEDIAN INCOME	RENT
Under State Density Bonus Provisions		
Very Low	50%	\$485.00
Low	60%	\$582.00
HUD Categories		
Very Low	50%	\$485.00
Low Income	50%-80%	\$485.00-\$776.00
Moderate	80%-120%	\$776.00-1,164.00

Source: STA Planning, Inc.

Note: Calculations are based on the following:
[% of medium income x medium income x .30] ÷ 12

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